PREFACE

...d that the Scientific Exhibits presented at each Annual Meeting of the ... fer the finest medical postgraduate course in the world. Their ... has been so rapid that many physicians regard the Scientific Exhibits as the ... nnual Meetings. Several factors account for the extraordinary value attached ... he Scientific Exhibits are designed to highlight quickly and effectively the ... xperiments and ideas of physicians and scientists. Secondly the Scientific ... l and highly efficient visual method for the communication of knowledge ... entific Exhibits provide a common meeting ground for discussion by general ... s, ... ientists, teachers and medical students.

... a of this volume Scientific Exhibits could be seen only in one place and at a designa... ... ow for the first time physicians unable to attend the Annual Meeting are given the opportun... o see Scientific Exhibits reproduced in the pages of a single volume. They are enabled to read and study these Exhibits without hurry and at their own convenience.

High production costs and space limitations have encouraged deviation from conventional book making and assuming certain liberties with the material. The Scientific Exhibit is essentially a visual presentation and every attempt has been made to retain this character. Throughout this first effort the purpose has been to accomplish the best volume possible with the materials submitted handling illustrations and textual matter in a way so as to permit the publication of the greatest number of exhibits.

Obviously it has been impossible to reproduce in one volume of 800 pages every exhibit shown at the Annual Meeting. This book therefore includes exhibits that have been singled out for Awards, Certificates of Merit and Honorable Mention by the A. M. A. Committee of Awards, as well as additional exhibits that have wide appeal for practicing physicians. The number included in this volume approximate one-third of the exhibits shown at the Annual Meeting. To give the reader some idea of the magnitude of the program and to give him some degree of completeness each exhibit in each established section of the Scientific Assembly is shown in its entirety or in abstract. The future holds the possibility that more complete exhibits and fewer abstracts will make up subsequent volumes.

Acknowledgements are due first of all to the publisher Grune and Stratton Inc. for their willingness to pioneer this volume and to Mr. Gilbert S. Cooper Managing Editor of the A. M. A. Specialty Journals, and Noah D. Frabricant, M.D., Editorial Associate of the Journal of the American Medical Association for their interest in organizing the material for publication to Mr. Theodore Rich of the A. M. A. Specialty Journals staff for his assistance in copy editing and in the preparation of camera copy and Miss T. K. Cooper for the preparation of camera copy. Without their assistance, early publication of this volume would not be possible.

THOMAS G. HULL
Secretary Council on Scientific Assembly

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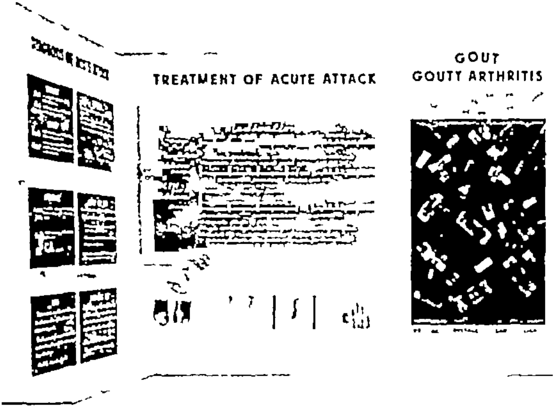
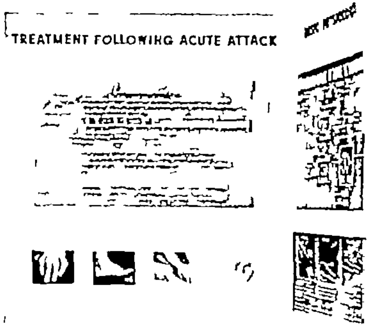


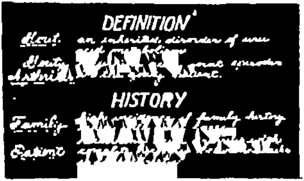
Gout and Gouty Arthritis.

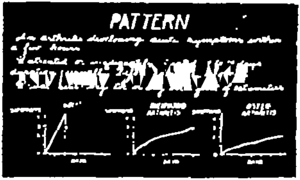
L. Maxwell Lockie, John H. Talbott and Charles Bishop University of Buffalo School of Medicine and the Buffalo General Hospital, Buffalo.

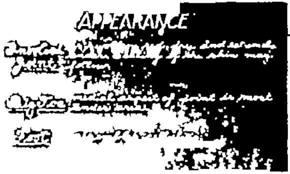
The diagnosis of gout and gouty arthritis is outlined. Treatment for the acute attack and for the period following the acute attack is given in detail. A new method of treatment will be of interest to physicians. In addition, a detailed description of the formation of uric acid molecules is shown in sketch form.

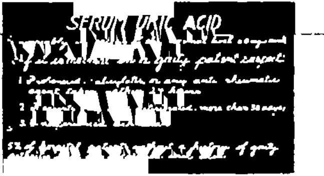


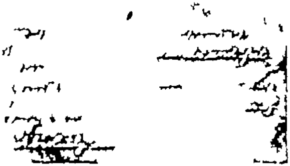
DIAGNOSIS OF ACUTE ATTACK









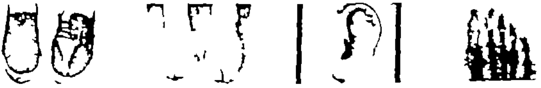


TREATMENT OF ACUTE ATTACK

Medication

ACTH plus Colchicine — used in refractory cases

Diet — Adequate fluids
High carbohydrate - Low fat - Omit meat, fish, fowl



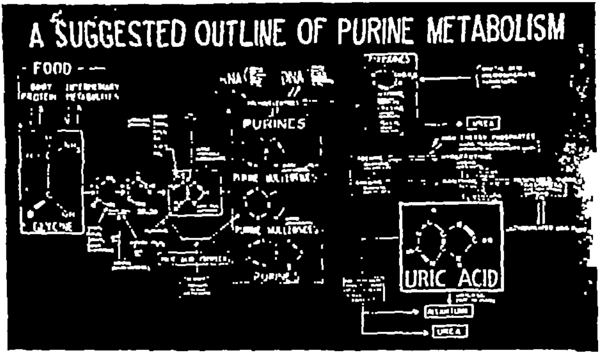
TREATMENT FOLLOWING ACUTE ATTACK

Medication

Probenecid

Diet — Maintain ideal weight for age and body build
High carbohydrate - Low fat - Adequate protein

BASIC PHYSIOLOGY



Roswell Park Respirator

J O Elam and Clinton D Janney Roswell Park Memorial Institute, Buffalo.

Mechanical artificial respiration is advantageous in selected patients during anesthesia. The device exhibited is designed to insure that an adequate tidal volume is delivered to the lungs. Ventilatory devices that cycle at preset airway pressures may in the presence of increased airway resistance fail to deliver adequate volumes. Devices that deliver a measured, fixed volume will produce whatever airway pressure range is required to move the gas volume. A fixed volume respirator has been developed in which the range of airway pressures generated can be shifted to positive pressure only negative pressure only or a range of both positive and negative pressure. Volumes delivered range from 400 cc. to 2,000 cc., respiratory rates from 4 to 40 minutes, and relative duration of inspiration and expiration may be independently altered. Such a device may be used wherever an unconscious patient requires prolonged artificial respiration.

Fifty Years of Organized Anesthesia.

Albert M. Betcher, Benjamin J Ciliberti, Paul M. Wood, and Lewis H. Wright New York.

The exhibit includes charts of the organizations in anesthesiology beginning with the inceptive minutes of the Long Island Anesthesia Society in 1905 to the present status of anesthesia societies. It traces the origins of the American Board of Anesthesiology the American College of Anesthesiologists, the residency training programs, medical school curriculums, and establishment of the Library Museum. In addition, anesthetic agents, equipment, and publications that developed during these 50 years are to be displayed and demonstrated together with especially illustrated material of interest to anesthesiologists.

The Hospital Coding Service and Medical Audits.

Lucien E. Morris, University of Washington School of Medicine, Seattle, and William J Emanuel, University Hospitals, Iowa City

This exhibit depicts the advantages of an adequate extraction and collection of data from patients' hospital records and subsequent utilization of that data by coding, collating, cross correlating, sorting, and tabulating through use of available business machines. Coding is done from summary sheets using the World Health Organization Codes and auxiliary codes of the American Society of Anesthesiologists, including a new and complete code of operations. Data coded for possible correlated use and tabulation include age, sex, diagnoses, procedures performed, results, complications drugs used, causes of death, etc. The system offers the opportunity of comparison of work done and results obtained in individual hospitals, diverse areas of the country or even countries of the world, since the codes used are already international in character.

The Automatic Maintenance of Anesthesia.

M. Jack Frumin, the Columbia-Presbyterian Medical *Center* New York.

The autoanestheton is an anesthetic apparatus that automatically provides artificial ventilation with a 3:1 nitrous oxide-oxygen mixture in subjects rendered apneic with succinylcholine, a synthetic muscle relaxant. The depth of respiration is automatically controlled by the carbon dioxide concentration in the expired air. The rate of administration of succinylcholine is semiautomatically controlled. The arterial pressure is monitored by a *new mechanical device. During the exhibit the autoanesthetion will* require an artificial lung in a manner analogous to the respiration of patients during operation. The exhibit also includes charts showing the effect of the autoanesthetion upon the blood tension of oxygen, carbon dioxide, and pH during operations.

Anesthesia Case Records for Teaching.

S. G. Hershey Edwin Emma, and Barbara Lipton, Beth Israel Hospital, New York.

The exhibit illustrates a method for selecting, classifying, and utilizing anesthesia case records for use in a resident training program. The selected *case records are photographed and filed as 35 mm. slides.* The procedure and equipment for application of this slide file are shown. There is also a graph demonstrating the processing of one such case from the operating table, through the projection of the finished slide onto a screen in the classroom.

Recent Advances in Local Anesthetic Agents.

F Paul Ansbro, Albert E. Blundell, and Joseph C. Sweeney Jr., Brooklyn, N Y

Four recently synthesized local agents have been tried on the basis of the five principles governing the utility of these agents in anesthesia, namely (1) potency (2) speed of onset (3) spread in the tissues, (4) duration of action, and (5) toxicity Each agent was used in maximum therapeutic amount in effecting epidural anesthesia, and their relative *merits were judged by the five criteria listed. Charts and graphs depict* each agent as it compared with the others in fulfilling the five criteria.

Circle Absorber Efficiency

Elwyn S. Brown and Paul Zuckerman, Roswell Park Memorial Institute, Buffalo.

The accumulation of carbon dioxide and the resulting respiratory acidosis during anesthesia may result from inadequate removal of carbon dioxide in closed circle absorbers. *The exhibit presents graphically the time* efficiency of several commonly used circle absorbers. A reversible canister design that has a longer time efficiency and that affords a more complete exhaustion of the carbon dioxide absorbent has been developed and is compared with presently available designs.

Technique of Nitrous Oxide-Oxygen-Alphaprodine Anesthesia.

Irving M. Riffin, Upper Montclair N. J

This exhibit describes the technique and advantages of the use of alphaprodine as a supplement to nitrous oxide anesthesia. A dummy operating scene is depicted with an actual anesthesia machine and intravenous drip apparatus in place. Emphasis is placed on the practical value of this technique in general surgery and of the methodology involved.

Mephentermine as a Vasopressor in Surgery and Obstetrics A Clinical Evaluation.

Robert A. Hingson, Hamilton S. Davis, Robert LeLievre, Charles E. Inman, and Thomas Kelly University Hospitals of Cleveland, Cleveland.

The exhibit correlates the effects of mephentermine upon the blood pressure of both surgical and obstetric patients under anesthesia. When administered to a large number of patients it responded adequately in 74% of surgical cases and 86% of obstetric cases. The authors feel that mephentermine is an adequate and safe depressor for prophylactic and therapeutic use during anesthesia for surgery and obstetrics.

Silent Regurgitation and Aspiration During Operation.

JOHN ADRIANI, WILLIAM L. BERSON, and MORTON PHILLIPS
Louisiana State University School of Medicine and Charity Hospital, New Orleans.

The exhibit summarizes a study of the incidence of silent regurgitation and aspiration during general anesthesia on 1,000 patients. Silent regurgitation occurs most frequently when difficulty is encountered with induction and maintenance of anesthesia. The incidence is highest in patients with a stomach tube in place, in those who are operated upon in the head up position, in patients who are intubated for endotracheal anesthesia. The incidence of regurgitation in the head down position is average, in the lateral position above average, in the head up supine position above average. The incidence with cyclopropane and pentothal is considerably below average, that with nitrous oxide or ethylene followed by ether greater than average, and that with nitrous oxide pentothal and muscle relaxants greater than average. Methods of prevention are emphasized. The morbidity following aspiration in these cases is also shown.

INTRODUCTION

THE PROBLEM

SILENT REGURGITATION OCCURS WITHOUT OBVIOUS MANIFESTATIONS UNKNOWN TO THE ANESTHETIST. THIS STUDY SUMMARIZES THE INCIDENCE AND PREDISPOSING FACTORS IN 926 SURGICAL PATIENTS UNDER GENERAL ANESTHESIA.

SILENT REGURGITATION MUST NOT BE CONFUSED WITH OBVIOUS VOMITING AND RETCHING.

METHOD OF STUDY

INDIGO CARMINE, AN INSOLUBLE DYE, WAS ADMINISTERED ORALLY IN A CAPSULE 30 MINUTES PRIOR TO ANESTHESIA.

THE DYE WAS RECOVERED IN THE TRACHEA AND PHARYNX BY SUCTIONING OR SWABBING UNDER DIRECT VISION WITH A LARYNGOSCOPE AT CONCLUSION OF OPERATION. ADDITION OF AMMONIA DIFFERENTIATES DYE (TURNS BRIGHT RED) FROM BLOOD (TURNS BROWN).

PRESENCE OF DYE IN TRACHEA INDICATED ASPIRATION. PHARYNX ONLY—REGURGITATION.

PREPARATION OF PATIENT

AGE — — — — — — — OVER 10 — FASTING

OPERATION — — — — — ALL TYPES EXCEPT CRANIOTOMIES ELECTIVE

PREMEDICATION — — — MORPHINE SCOPOLAMINE

ANESTHETIST — — — — — RESIDENT PHYSICIANS AND NURSES

ANESTHETIC DRUGS PENTOTHAL, CYCLOPROPANE, ETHYLENE ETHER ALONE OR IN COMBINATION

RESULTS

TOTAL PATIENTS 928

REGURGITATED 127 14%

ASPIRATED 66, 7%

QUANTITY RECOVERED VARIED FROM A TRACE ON THE SWAB TO 5—10 cc REMOVED BY SUCTION

VARIATION DUE TO
ANESTHETIC AGENTS

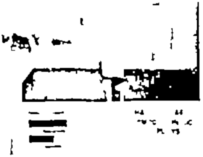
PENTOTHAL INDUCTION

BELOW AVE 5%
..C IONS SMOOTH

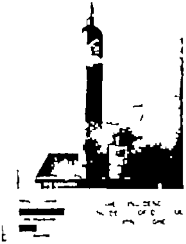
PENTOTHAL NITROUS OXIDE

... VERAGE
... OF VARYING
... IS PROBABLE REASON

CYCLOPROPANE



ETHYLENE ETHER SEQUENCE



VARIATION DUE TO TECHNICAL FACTORS

SMOOTH INDUCTION

DIFFICULT INDUCTIONS

ENDOTRACHEAL INTUBATION

NINE INC DENCE OF ALL BUBBE LIGHTE MB OF ANEST ES NO TECHNICAL AMPULATION PL YE ROLE

PRESENCE OF STOMACH TUBE

INCREASES RA HER THAN REDUCE INCIDENCE TUBE MAINTAINS CARDIAC SPHINC- TATENT & PREVENTS SEAL IT OF MASK CASES REQUIRING ONE USUALL HAVE RETENTION

VARIATION DUE TO
POSITION OF PATIENT

LATERAL PRONE POSITION

MORE THA ARE PITLBA IC NO DIFFICULTY IN TRIN VEY PLA OF NES NES MAY BE ACTORS

PRONE

INSUF IE UMBE OF CASE TO DR ONCLUSION

SUPINE

SLIGHTL ABOVE YE ARE

HEAD DOWN POSITION

NOT SHE THAN YE AGE. SP IN TRACHE OCCURS IN SP OF INVOLVED PO ION

HEAD UP POSITION

VARIATION DUE TO

TYPE OF OPERATION

THYROIDECTOMY AND NECK OPERATIONS

HIGHE HAN YE AG ALL IN UBATE HEAD UP POSITION MA BE ACTORS

GYNECOLOGICAL OPERATION

LOW INCIDENCE HAN YE AGE HEAD DOWN POS ION DID NOT FAVOR REGURGI TION

ABDOMINAL OPERATION

PROPHYLAXIS AND MORBIDITY

CELLULOID MASK

USELESS PREV TIVE
SP ION OCCUR BE ORE
GA TRIC CONTEN APPE RS
IN MASK

GASTRIC LAVAGE

NOT OF BENEFIT IN EITHER FASTING AND NON-FASTING SUBJECTS MAY ACTUALLY AGGRAVATE SITUATION BY INCOMPLETE REMOVAL OF LAVAGE FLUID

ANESTHETIC TECHNIQUE

SKILL PLAYS A ROLE EVENNESS OF ANESTHESIA IMPORTANT LIGHT ANESTHESIA PREDISPOSES MORE THAN DEEP DRUGS PERMITTING RAPID INDUCTION INTO THIRD STAGE (CYCLOPROPANE, PENTOTHAL SURITAL, EVIPAL) DESIRABLE

MORBIDITY

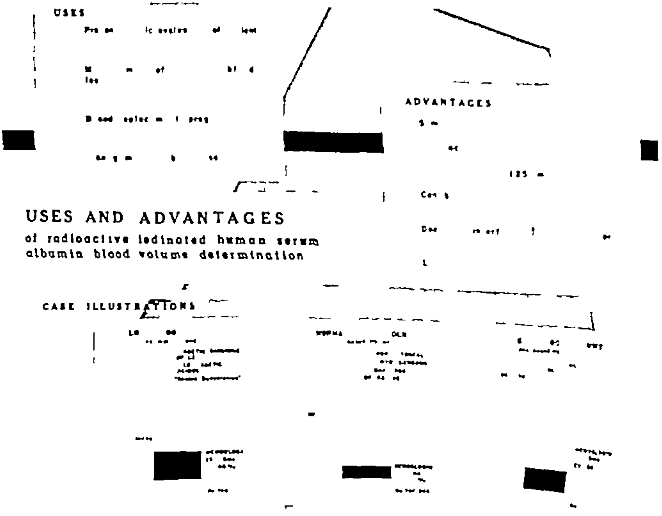
NEGLIGIBLE IN THIS SERIES PROBABLY DUE TO RECOGNITION OF ASPIRATION & PROMPT INSTITUTION OF BREATHING EXCERCISES AND ANTIBIOTIC THERAPY POSTOPERATIVELY

Blood Volume Determinations for Anesthesia.

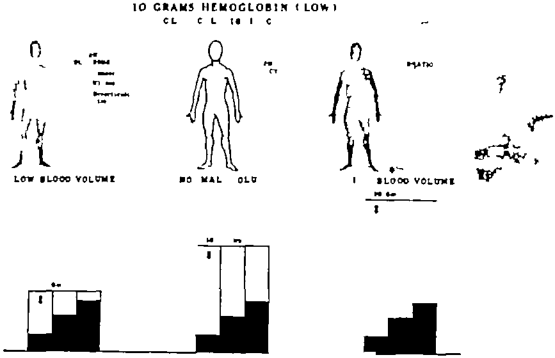
C. E. WASMUTH and OTTO GLASSER, Cleveland Clinic, Cleveland.

Blood volume determinations are a valuable guide in the preanesthetic evaluation of the surgical patient. Utilizing the radioactive iodinated human serum albumin technique accurate, rapid and repeated blood volume determinations can be made. The anesthesiologist and surgeon no longer need to rely on concentration of hemoglobin or hematocrit to infer a volumetric determination of blood volume

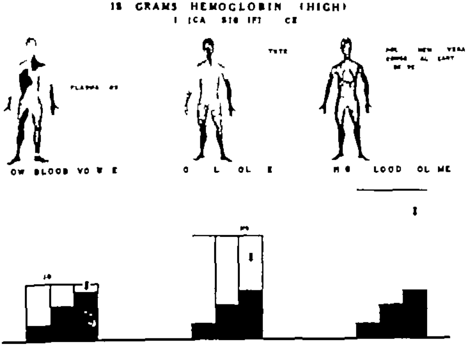
HONORABLE MENTION



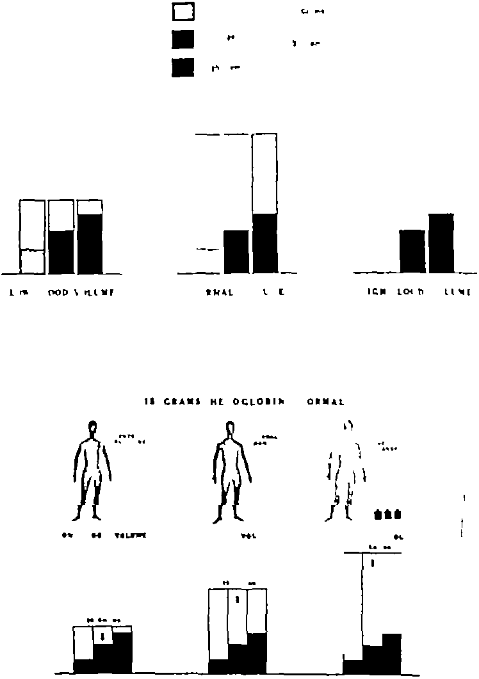
BLOOD VOLUME IS AN IMPORTANT FACTOR IN SURGICAL EVALUATION



TOTAL BLOOD VOLUME CANNOT BE INFERRED FROM EITHER HEMOGLOBIN OR HEMATOCRIT VALUES

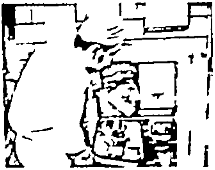


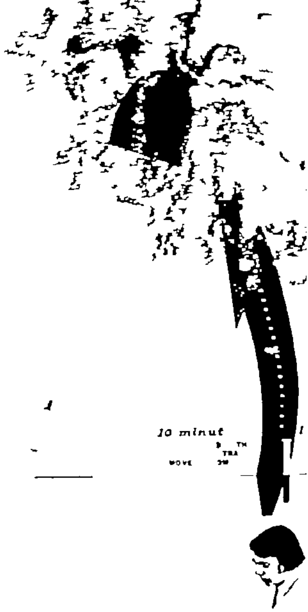
VARIATIONS IN BLOOD VOLUMES

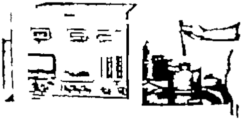


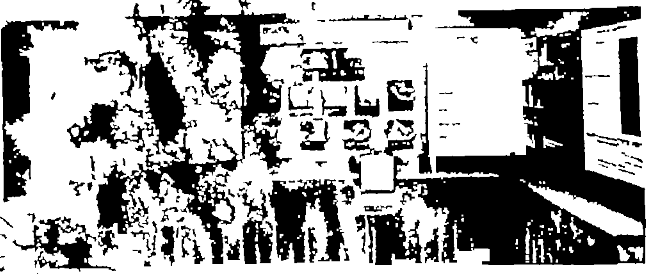
TECHNIC

[illegible] a five iodinated human serum albumin [illegible] volume determination.





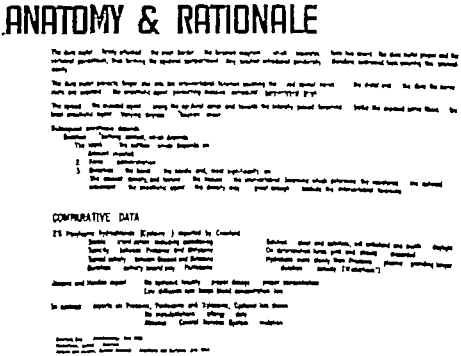




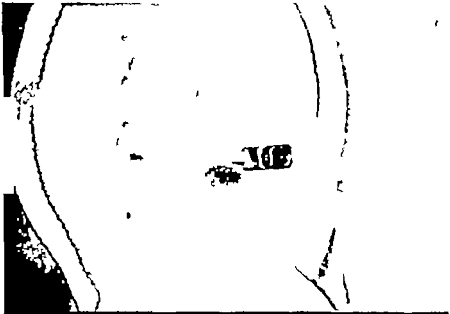
Epidural Anesthesia for Cesarean Section.

F E. GROSSMAN I M PALLIN and J WACHTEL, Jewish Hospital of Brooklyn, Brooklyn N Y

The exhibit includes charts and diagrams showing the anatomy of the epidural space, the physiology of the epidural space, description of the epidural technique, the advantages and disadvantages of the epidural anesthesia for cesarean section, and results of 100 cases of cesarean sections done under epidural anesthesia. A moulage demonstrating the above, with an opportunity for visitors to try an epidural puncture, is shown.



Technic of wheal formation and infiltration of deeper layers.



2

Use of 18-G needle to perforate skin and to make a track for the 19-G malleable needle. The 18-G needle picks up the ligaments and gives the intended direction for the malleable needle.

The 19-G needle firmly fixed in ligamentous structures, with the "hanging drop" visible.

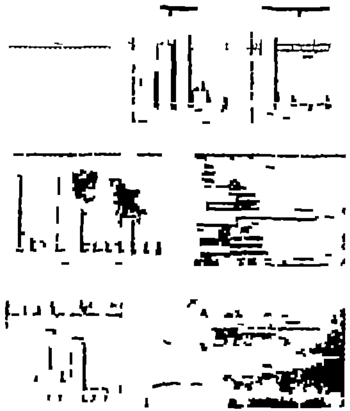
Disappearance of "hanging drop" on entering epidural space

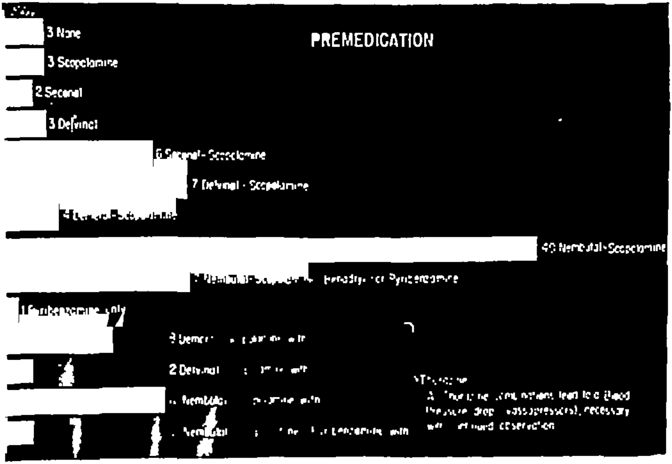
5.
Test of aspiration for spinal fluid and free flow

6
Injection of the necessary amount of hexylcaine. Notice fingers steadied on back of patient to hold hub of needle from moving

7.
Test of adequate level by pin-prick

8.
Ten to fifteen minutes later patient able to move lower extremities actively. This is of aid in catherization and positioning




PREMEDICATION
3 None
3 Scopolamine
2 Seconal
3 Delvinal
6 Seconal - Scopolamine
7 Delvinal - Scopolamine
40 Nembutal-Scopolamine
1 Pyribenzamine only
2 Delvinal

BLOOD' PRESSURE AND VASOPRESSORS

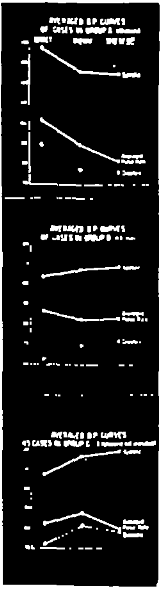
(Given Before and /or During the Procedure)

A. Preeclampsia, Toxemia, Hypertension, etc.

5 First Sections 5 Repeat Sections

		Onset C.	Delivery	End of Op.	
Blood Pressure Range	from	100/76	116/76	108/80	Lowered pressure noted after premed. Thorazine
	to	162/102	130/76	134/82	
Pulse Rate Range	from	70	84	80	
	to	124	90	92	

1 case (Xylocaine) with Vasopressor before Epidural Anesthesia
5 cases with minimal Vasopressor during surgery
4 cases with NO VASOPRESSORS



B. Repeat Sections (43) in Normotensive Patients

Blood Pressure Range	from	80/60	90/53	90/58	Thorazine reaction as above
	to	138/90	110/80	116/94	
Pulse Rate Range	from	100	84	88	
	to	96	116	76	

4 cases (Xylocaine) with Vasopressor before Epidural Anesthesia
9 cases with Vasopressor before Epidural or minimal Vasopressor during surgery
30 cases with NO VASOPRESSORS

C. First Sections (45 Cyclaine 2 Xylocaine)

Cephalopelvic Disturbance, Transverse Arrest, Placenta Previa, etc.

Blood Pressure Range	from	94/60	120/72	128/72
	to	130/80	110/76	124/78
Pulse Rate Range	from	116	84	84
	to	84	82	80

2 cases (Xylocaine) with Vasopressor before Epidural Anesthesia
16 cases (in beginning of study) with Vasopressor before Epidural Anesthesia or minimal Vasopressor during surgery
31 cases with NO VASOPRESSORS

CONCLUSION: 35 cases with Vasopressors (all the Xylocaine cases 19 Cyclaine cases at the start of the series)

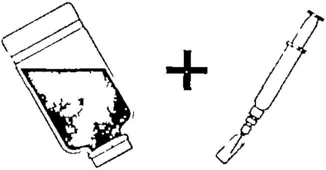
65 cases with NO VASOPRESSORS

1 spotty Epidural Analgesia Gas Oxygen Ether
1 case with 24 hour retention of urine (catheterization necessary)
1 case with a fibrinogenemia (pre-op Hgb 7.6 gm. 1000cc. blood pre-op; 1500 cc. blood post-op and fibrinogen)
1 case with exophthalmos, old poliomyelitis
1 case with repair of laceration of the posterior uterine wall
1 case with history of Cesarean Section (1938/Cont Spinal), brain operation (1938) for Jacksonian Epilepsy
1 case macerated stillbirth (Placenta Previa)

NO POST-OPERATIVE SPINAL HEADACHE

Since this report was prepared, 200 additional cases have been done with NO VASOPRESSORS without sequelae

Procedure



Tripelennamine (Pyribenzamine 25 mg – 1cc. solution) added to first bottle of blood prior to administration to each patient in study The antihistamine was withheld from controls

The drug was not added to subsequent blood unless series exceeded 12 bottles or interval between trans fusions was greater than 6 hours

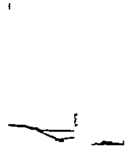
Method of Administration

Incidence of Reactions

1515 patients
without
prophylaxis

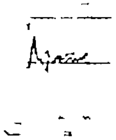
REACTIONS	WITHOUT TRIPELENNAMINE	PERCENT
PYROGENIC	[illegible]	[illegible]
ALLERGIC		[illegible]
HEMOLYTIC	[illegible]	[illegible]
TOTAL		
TOTAL ... PINTS BLOOD		[illegible]

ALLERGIC



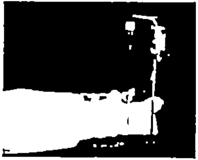
Symptoms

PYROGENIC



Symptoms

OPERATING ROOM

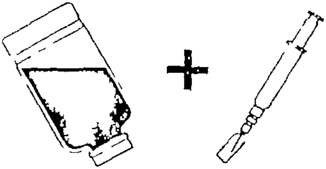


WARD

1616 patients
with
prophylaxis

REACTIONS	WITH TRIPELENNAMINE	
PYROGENIC		
ALLERGIC	[illegible]	[illegible]
HEMOLYTIC		[illegible]
TOTAL		[illegible]
... PINTS BLOOD		[illegible]

Procedure



Tripelennamine (Pyribenzamine 25 mg – 1cc solution) added to first bottle of blood prior to administration to each patient in study. The antihistamine was withheld from controls.

The drug was not added to subsequent blood unless series exceeded 12 bottles or interval between transfusions was greater than 6 hours.

Method of Administration

[illegible]

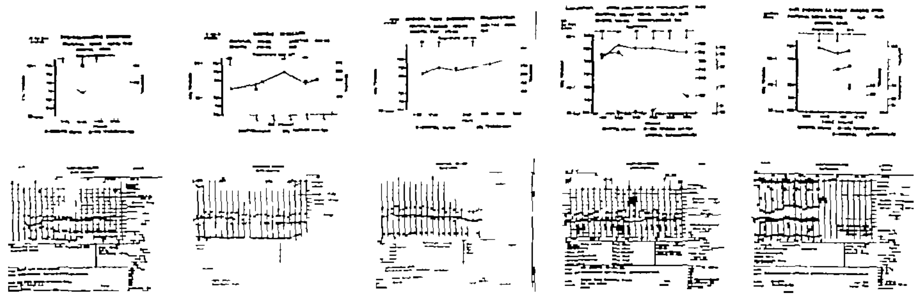
[illegible]

[illegible]

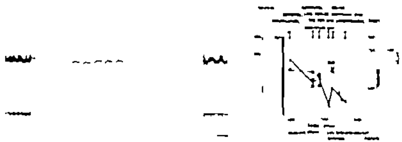
Controlled Analgesia with Continuous Drip Meperidine.

H. M AUSHERMAN, W K. NOWELL, and R. C. MARTIN,
Duke Hospital Durham, N C.

For several years meperidine, given by intermittent or repeated dosage has been recognized to be of value in providing potent analgesia during general anesthetic procedures. This exhibit shows the advantages of administering this drug as a continuous or intermittent dilute drip in a concentration of 9.5 mg. per cubic centimeter usually in conjunction with pentothal sodium and nitrous oxide. Experiences gained with 1 000 administrations are reviewed. Associated clinical investigations relate the alterations in oxygen consumption seen with moderate dosages. Determinations of pH concentrations and carbon dioxide tensions, performed in 30 patients, show to what degree respirations may be depressed in rate before respiratory acidosis occurs, unless ventilation is assisted by the anesthesiologist.



6 CATS



A. NOTE STABILITY OF B.P. AND PULSE.

B. IN HUMANS, NO RESPIRATORY ACIDOSIS WITH RESPIRATIONS 12 PER MIN. OR HIGHER.

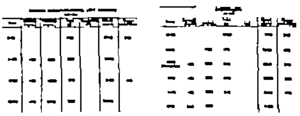
C. IN CATS, PROGRESSIVE ACIDOSIS AS RESPIRATORY RATE DIMINISHES TO ZERO.

D. ARTERIAL OXYGENATION MAINTAINED WELL UNDER ALL CIRCUMSTANCES.

E. AS RESPIRATORY RATE SLOWS, VENTILATION SHOULD BE ASSISTED BY ANESTHESIOLOGIST.

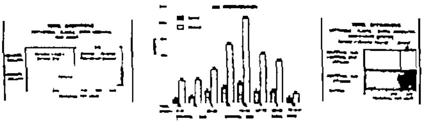
Assessment of External Respiration

10 PATIENTS

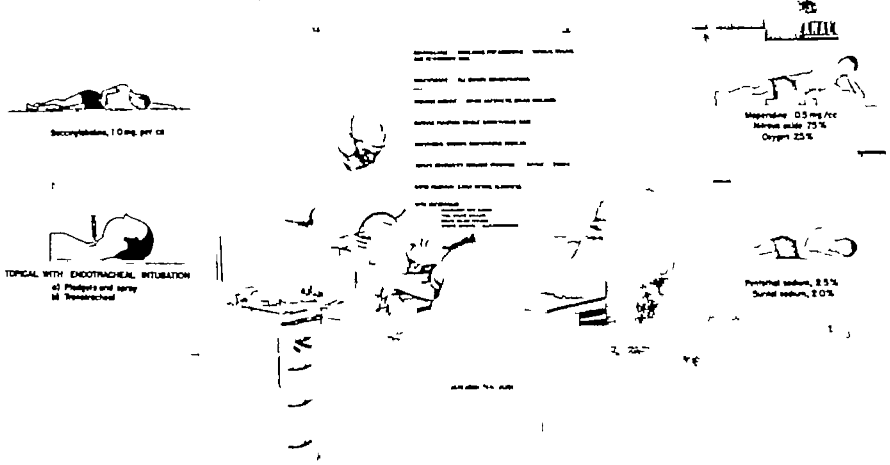


Statistical Analysis

1000 PATIENTS



CONTROLLED ANALGESIA WITH CONTINUOUS DRIP – Meperidine



S [illegible] Y

Properties of Meperidine

1. Potent analgesic with mild sedation.
2. Respiratory depression with large doses rapidly administered. Rate decreases, tidal volume adequate. Depression reversible with N-Allylnormorphine
3. Blood pressure, pulse rate stable with continuous dilute administration.
4. Rapid injection intravenously of concentrated solution may produce hypotension.
5. Cerebral blood flow unaltered.
6. Blocks vagal reflexes ... heart. Inhibits abnormal ventricular rhythms.
7. Pupillary size and reflexes not affected.
8. Rapid metabolism ... liver

   Mild atropine-like action. Relieves induced bronchial spasm.

10. Allergic urticarial manifestations about cannulated vein in 1% of patients. May release histamine from body tissues. Controlled with antihistaminic drug intravenously.

    Solutions stable ... dilute or concentrated forms.

Method of Administration

1. Add 500mg Meperidine ... 1000cc bottle dextrose 5% ... water or normal saline. Concentration is 0.5mg per cc.
2. If endotracheal intubation contemplated, topical anesthesia may be given (a) transtracheally (b) spray (c) pack
3. Dilute drip Meperidine 30 to 40 drops per minute, may be started before anesthesia induced
4. Unconsciousness and hypnosis produced with ultra-short acting barbiturate 2 - 2.5% solution
5. When the patient ... unconscious, nitrous oxide 75%, oxygen 25%, given from gas machine
6. Short-acting muscle relaxant administered ... facilitate intubation

During maintenance of anesthesia patient receives
(a) nitrous oxide 75%, oxygen 25%, semi-open or non-rebreathing technique
(b) Meperidine drip regulated according to respiratory rate and surgical trauma
(c) muscle relaxant as indicated for surgery
(d) ultra short acting barbiturate occasionally ... [illegible]
(e) assisted or controlled respiration when required ... adequate gas exchange and minute volume

Usually respiratory center remains functionally intact. When respiratory rate becomes less than 12 per min, assisted respiration indicated

CONCLUSION

MEPERIDINE CONFERS POTENT ANALGESIA DURING ANESTHESIA. IT REDUCES TOTAL AMOUNT OF PENTOTHAL SODIUM REQUIRED IN COMBINATION WITH NITROUS OXIDE-OXYGEN

CONTRIBUTES TO SMOOTHNESS OF ANESTHESIA

VALUABLE ADDITION TO GROUP OF NON EXPLOSIVE DRUGS

DIMINISHES REFLEX IRRITABILITY

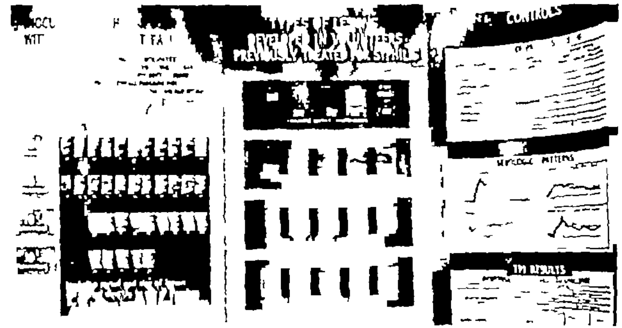
METABOLIZES RAPIDLY ALLOWING EARLY AWAKENING

MINIMAL INTERFERENCE WITH CARDIAC FUNCTION

MAINTAINS RESPIRATORY CENTER FUNCTIONALLY INTACT, ALTHOUGH SLOWING RATE OF ACTION WITH HIGHER DOSAGES

ALLYLNORMORPHINE SPECIFIC EFFECTIVE ANTIDOTE TO RESPIRATORY DEPRESSION

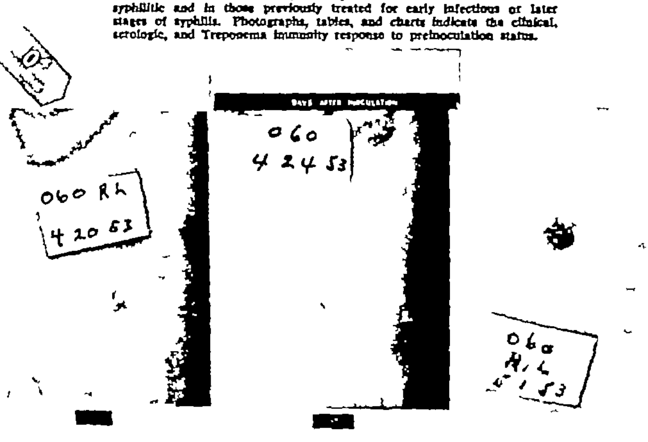
IN 10 OF 800 PATIENTS, URTICARIAL REACTIONS NOTED ALONG COURSE OF VEIN THROUGH WHICH MEPERIDINE FLOWED



Inoculation Syphilis in Human Volunteers.

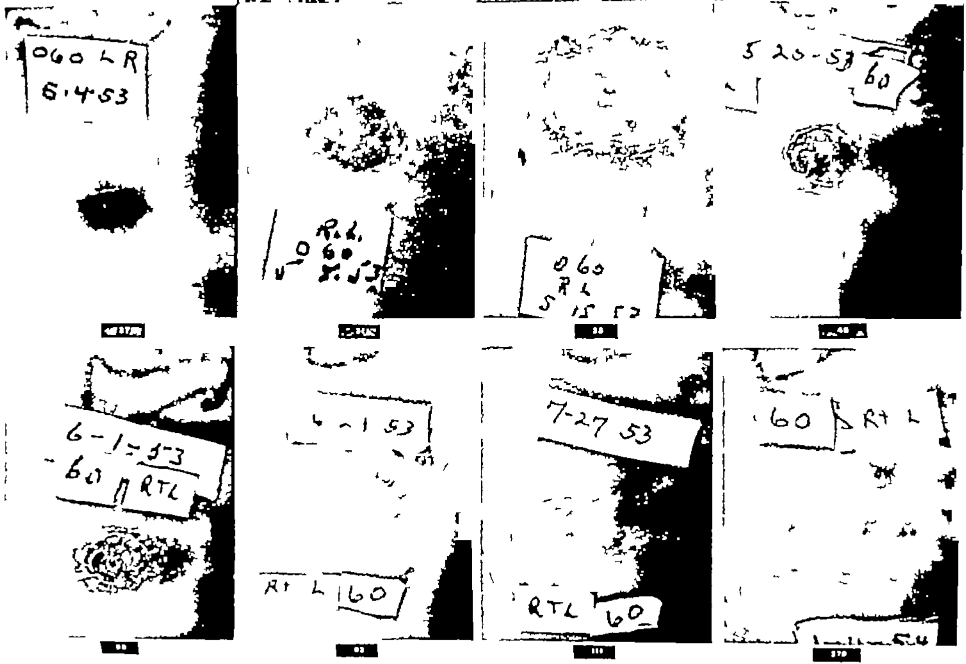
SIDNEY OLANSKY JOHN C. CUTLER, EVAN W THOMAS, BERNARD I KAPLAN LOPO de MELLO and HAROLD J MAGNUSON U S Department of Health Education and Welfare, Public Health Service, Washington, D C.

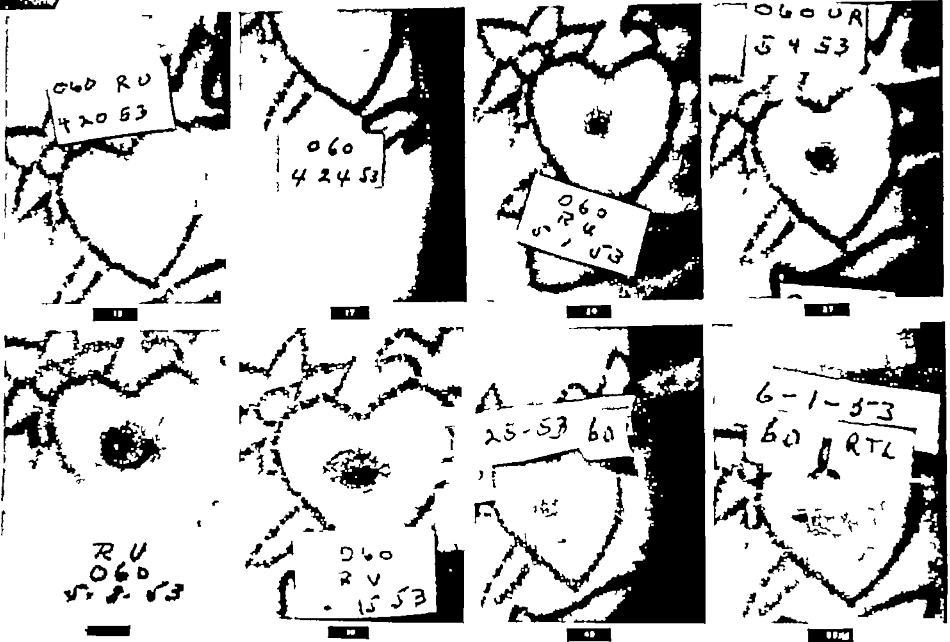
The exhibit shows the clinical responses to intracutaneous inoculation with the Nichols strain of *Treponema pallidum* in individuals never before syphilitic and in those previously treated for early infectious or later stages of syphilis. Photographs, tables, and charts indicate the clinical, serologic, and Treponema immunity response to preinoculation status.

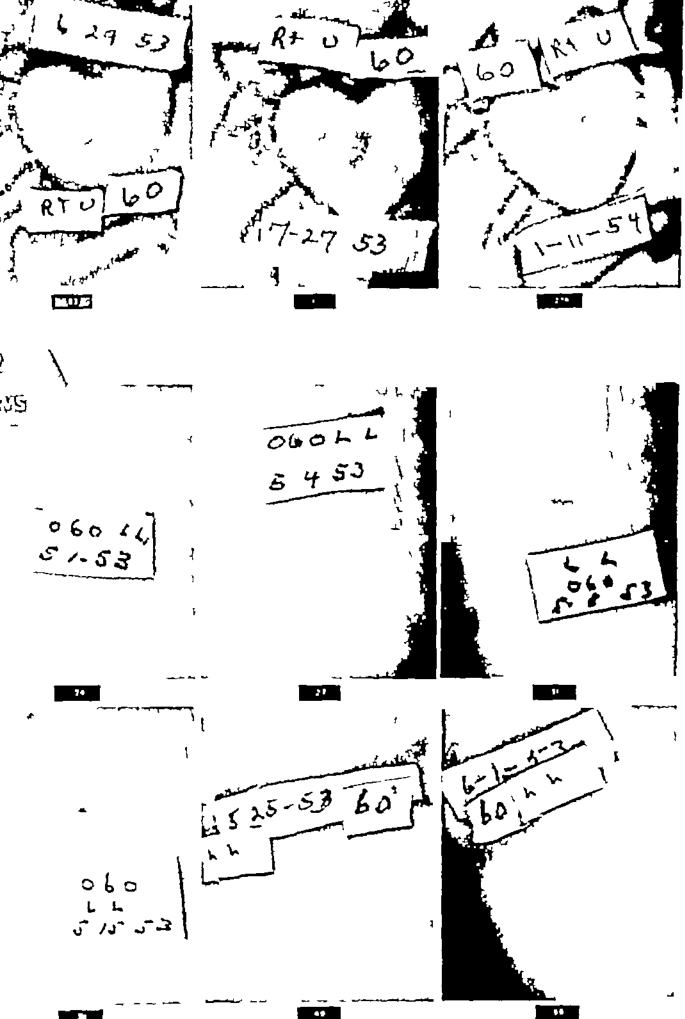


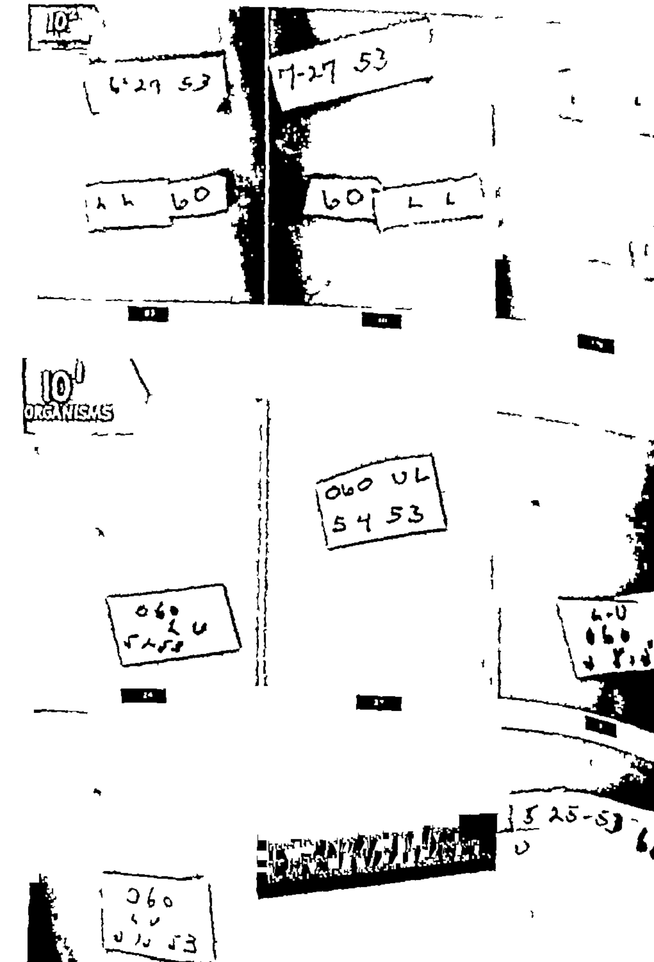
ORGANISMS

DAYS AFTER INOCULATION



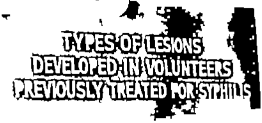

060 RU
4 20 53
060
4 24 53
060 UR
5 4 53
RU
060
6-1-53
60
RTL

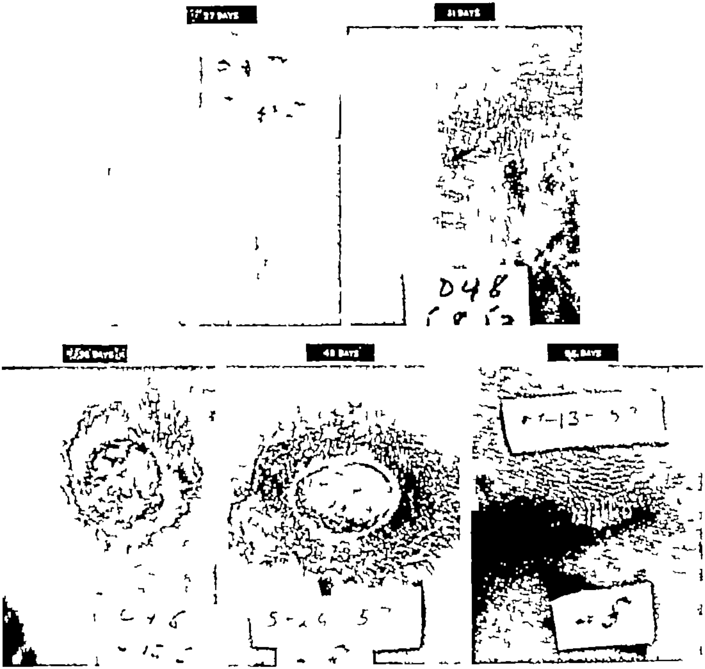

RT U
60
17-27 53
60
1-11-54
060



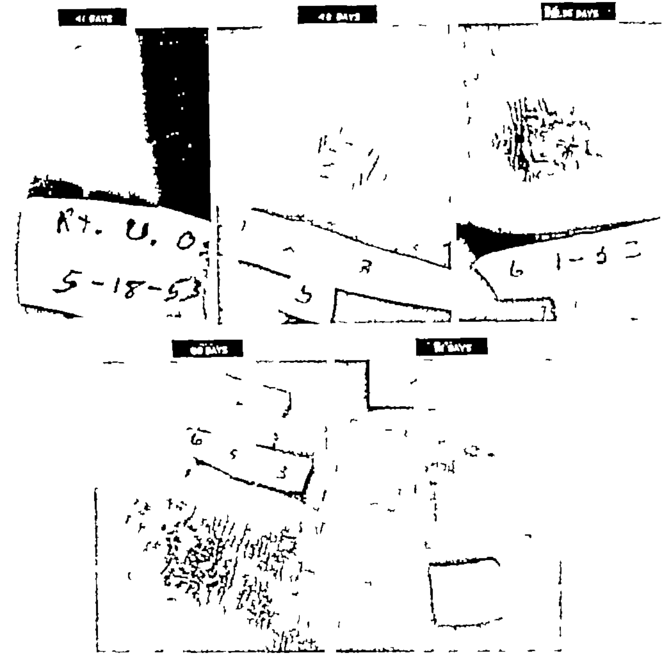
10^2
7-27 53
60
10^1
ORGANISMS
060 UL
54 53

SING SING SYPHILIS STUDY

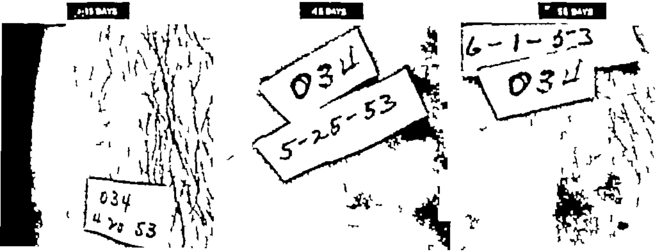




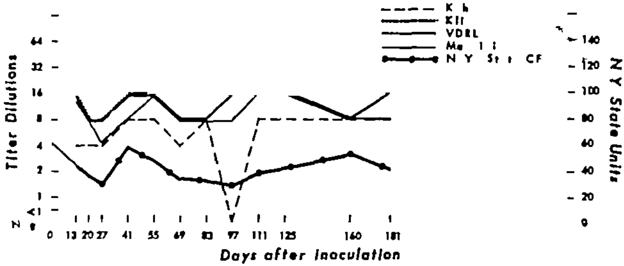
CONGENITAL SYPHILIS TREATED



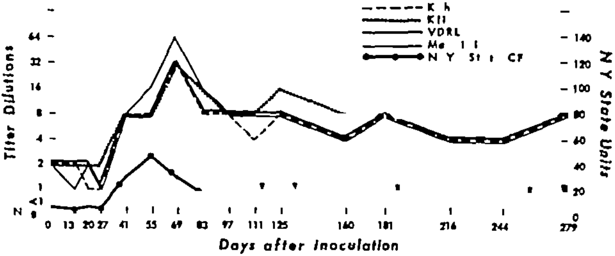
PRIMARY SYPHILIS, TREATED DARKFIELD POSITIVE



PATIENT NO. 012 EARLY LATENT SYPHILIS TREATED
Not reinfected



PATIENT NO 015 LATE LATENT SYPHILIS TREATED



TPI RESULTS

RESPONSE OF TPI TEST TO CHALLENGE

Response to Challenge with Virulent T Pallidum

Selected Diagnostic Categorie	Infected Experimentally Increase in Serologic T st for Syphilis Le ions Developed						Not Infected Experimentally No Increase in STS No Lesions Developed		
	Darkfield Positive			Darkfield Negative					
	Patients	Titer*	% Increase**	Patients	Titer*	% Increase**	Patients	Titer*	% Incre se**
Normal Controls	0	0	32 0	0			0		
Untreated Latent Syphilis	0			0			4	253 0	1 0
Treated Early Syphilis	9	0 3	340 0	2	15 4	40 0	0		
Treated Latent Syphil	1	272 0	14 0	9	10 0	90 0	14	33 0	0 3

* Geometric mean tite t time of challenge Normals given rbitrary value of 0 1

** Percent increase in mean tite each two weeks following challenge (change is exponential not rithmetic)

Erythema Nodosum.

Louis E. Harman Jr. and Elson B. Helwig, Armed Forces Institute of Pathology, Washington, D. C.

The exhibit is a summary of the information obtained from the review of 54 clinical records and the histological study of the pathological features of erythema nodosum. Differential diagnoses are presented with histological representatives of each of them.

Skin Trauma Produced by Mechanical Scratching Machine.

Raymond Goldblum, Pittsburgh; John Reinder, Walter Reed Army Medical Center, Washington, D. C.; and William N. Piper, Santa Monica, Calif.

Since itching and subsequent scratching is probably the most common symptom in dermatological patients, the study of the effects of mechanical scratching of the skin was initiated with a scratching machine. The effect of time, number of strokes, and pressure were studied on various areas of the body. Lichenification was produced on normal patients and in atopic states. The popliteal area was more susceptible to the formation of lichenification than the skin of the midback. Biopsies were taken before and after chronic scratching.

Keratoses of the Palms and Soles.

Maurice J. Costello and Constance Millette Buncke, Bellevue, Lenox Hill, and St. Clare's Hospitals, New York.

The exhibit includes enlarged black and white photographs, with legends, of the keratoses of the palms and soles occurring either as a distinct entity or as part of a generalized dermatosis.

Contact Dermatoses in Color.

George E. Morris, Boston.

The exhibit consists of a series of Kodachromes picturing the common contact dermatoses that are seen, both in industry and outside of industry. A chart depicts the most common industrial eruptions seen in an analysis of 2,000 cases.

Zinc Oxide: A New Microform, Pink Crystal.

Bernard Appel, Lynn, Mass.; Leslie M. Ohmart, Massachusetts College of Pharmacy, Boston; and Robert F. Stevens, Merck & Co., Rahway, N. J.

The exhibit is a study of a pure zinc oxide of extremely fine particulate size, so prepared that it possesses a naturally pink color that results from its peculiar physical structure. The exhibit will demonstrate the chemistry, physics, pharmaceutical preparation, and clinical experience.

Percutaneous and Oral Absorption of Vitamin A.

Albert Edward Sobel, Jewish Hospital of Brooklyn, Brooklyn, N. Y.

Vitamin A absorption through the skin has been demonstrated in vitamin A deficient animals as shown by restoration of growth, vitamin A stores in liver and kidneys, and disappearance of xerophthalmia. The amount of A absorbed depends on the concentration of vitamin A and the vehicle employed. The skin of normal animals is about twice as effective in vitamin A transfer as vitamin A deficient animals. The histological changes due to A deficiency are restored to normal at the site of application but not in neighboring sites. The results will be compared to findings with oral administration of vitamin A in various mediums. Some possible applications to dermatological disorders will be indicated.

Surgical Planing for Acne Scars—Dermabrasion (Freon 114): The Refrigerant Anesthetic.

Samuel Ayres III, Ralph Luikart II, and J. Walter Wilson, University of Southern California School of Medicine, Los Angeles.

The exhibit describes the procedure of surgical planing for acne scars and other cutaneous defects by means of a [illegible] brush, aided by a refrigerant [illegible] spray [illegible] skin to render it temporarily cold and locally anesthetized. [illegible] advantages over ethyl chloride are [illegible] appearance following surgical planing is shown in photographs. Contraindications and complications are discussed, and [illegible] planing is compared with surgical planing. The results [illegible] shown by clinical photographs.

The Limitations of the Therapy of Acne.

James Q. Gant Jr., George Washington School of Medicine, Washington, D. C.

This exhibit describes the limitations of various therapeutic agents currently in vogue in the management of acne. It is [illegible] at present there is no cure for acne and that only [illegible] cosmetic restitution may be achieved. The basis for the [illegible] etiological factors proposed for this disease and the [illegible] therapeutic approaches are discussed. What may be [illegible] logically and clinically from the different [illegible] of photographs, charts, tables, and drawings.

Treatment of Haemangioma Chiefly by Irradiation.

George E. Pfahler, Philadelphia.

The exhibit consists of Kodachrome slides, showing the condition at the beginning of treatment and during various stages of [illegible] dates listed on the slides, some of them many years after [illegible] some legends. Three projectors will be used. There [illegible] mimeographed copies describing briefly the technique and the [illegible] classification.

Microanatomy of the Epidermis and Its Appendages.

George Hambrick and Harvey Blank, Columbia University Medical Center, New York.

The exhibit consists of photomicrographs and drawings of [illegible] sections of skin structures. With the aid of [illegible] cells, the pilosebaceous and sweat duct structures have been [illegible] and visualized in whole mounts as well as in vertical [illegible] aspects of these structures are illustrated in [illegible] with [illegible] stains and with various types of microscopy.

Use of *Fludrocortisone* in Dermatoses.

R. C. V. Robinson, Baltimore City Hospitals and University of Maryland School of Medicine, Baltimore.

The effects of systemically administered and locally applied [illegible] cortisone (9 α A [illegible]) on dermatoses are described [illegible] and charts. The activity of the drug is compared with that of [illegible] cortisone. Lotion and ointment are evaluated quantitatively and [illegible]

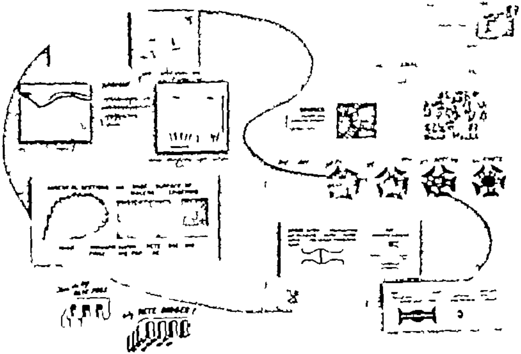
Structure and Dynamics of the Human Epidermis

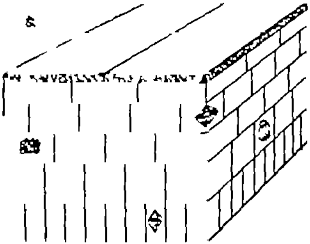
Herman Pinkus and
Catherine Heise Steele Detroit

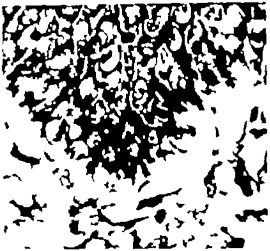
From the Detroit Institute of Cancer Research and Wayne University College of Medicine, Detroit

The epidermis over he b l as l ng heet h h h is ont nuou he bod open gs ith be g hel m of the mucous membranes. It is pierc ed by the openings of h. foll les nd glands nd is t mat l connected h the nderl l g mesodermal co m f om which t derives ts nou ish- ment I m he mor res ompare the epide mis h ma ea order to empha size hat it has th ee d mensions nd sever l la ers The habit of look ng at th n cross sect on d st ned ski end to mak us forget true spa ial lationships nd biologic event that onst tly take place in the epi dermis Th exhibit trie t present the best available nformation correla ed from thor ough su ey of the litera nd m ny years of personal i estigation by the senior thor Sta ements on ont oversial issues er form lated with

I the embryo, the single la er of ect dermal cells soon becomes t layered, then m lt layered This process goes on in d fferen egions of he body different times By





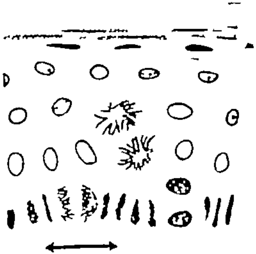


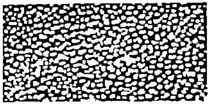
Supported in part by research grant C 2072 from he National Cancer Institute, of the National In- utes of Health, United Stat Public Health Service, and in part by an institutional grant from he American Cancer Society

se m l l loped t ges l the t l y ed st ge the pidermis onsist of ner layer of basal lls, h h m ltiply by m tosis l ba l er layer of per ferm ells, which spec lic fet l struct re nd lat disappe just as hair se l m m de Som thi d ntermedia y layer levelops out of the basal layer nd forms the et M lpighi or p ickle ll layer t lat fet l l fe ker t lra ion of the p ickle ells takes plac nd the epidermis has then r ached its f ll differen tiation.

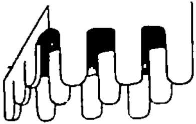
The ad lt h m epidermis consist en tl l of lls w thout i tersitial supporting material N m lly ther re y her from ten layers of lls to several dozen bet een the blood supply nd the outer surface. This ngement insu es protection one of the ma purposes of the epidermis, but it poses special problems of t tion oherence and mechanical resistance nd con ts for the h ghly specialized epidermal chitect re. I the h ma epidermis, nat has sol ed the problem of providing tough nd flexible uter coat not by utilizing inorga ic sub- stances like lime salts or relatively inert fiber and cutl les, bu t by sing li ing p otoplasm of cells. The li ing bricks of this wall do not only change all the time but f lfill ital f nctions of selective exchange of gases, lipids, l fluids, and of llergic and imm nologic esponse to stimuli.

HONORABLE MENTION

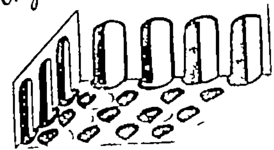




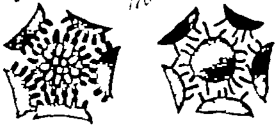
There are **NO**
"RETE PEGS"



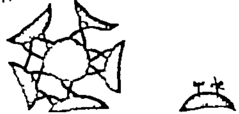
Only **RETE RIDGES !**



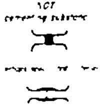
PRICKLES NO LOOSE – IDS



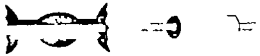
NO CRO– – – NO – OTS

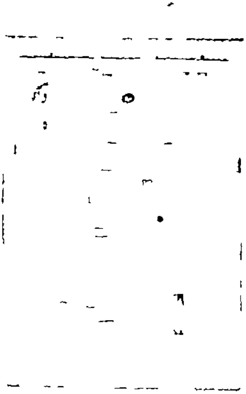


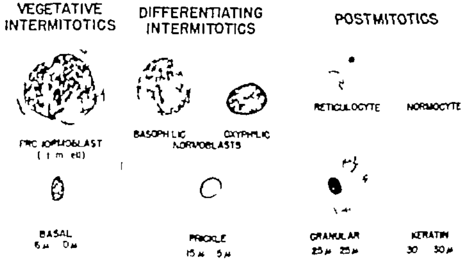
BRIDGE NODULES (desmosomes) are thickening of center of bridge her the two c llular membranes touch

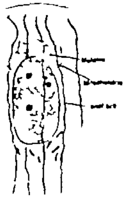


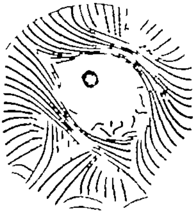
BRIDGES are PROTOPLA IIC CON ECTIONS b tween through which timuli and chemical substances are transmitted and through hich TONOFIBRILS pass l es in conduit



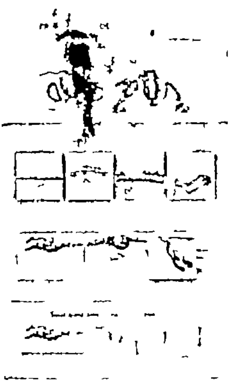


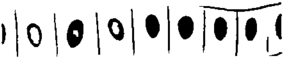


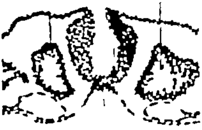


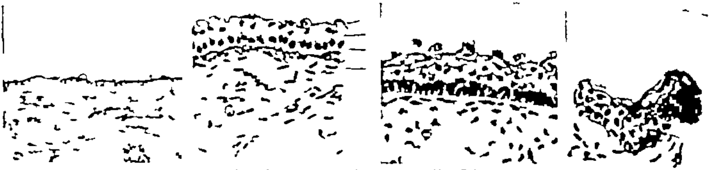


[illegible] differentiated cytoplasm [illegible] break and form [illegible] according to the requirement of [illegible] soluble keratin

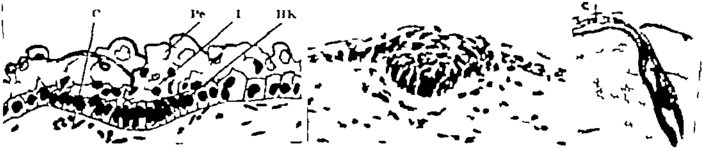


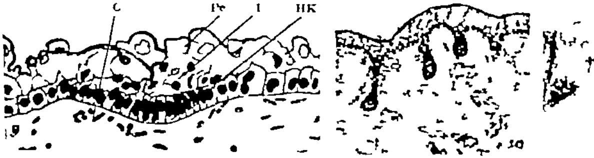


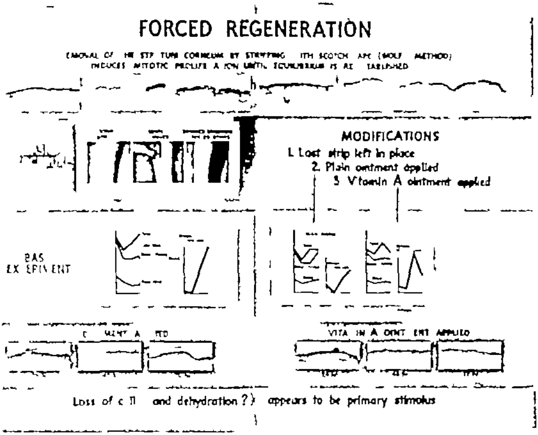


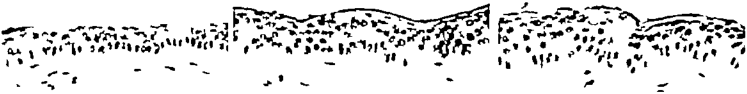


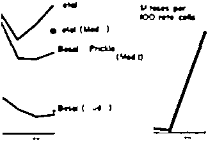
P, periderm; I, [illegible] intermedium ([illegible]); B, [illegible] basale ([illegible] germinativum).
HK, [illegible] anlage. Horizontal lines [illegible] at right are, in order from top to bottom, to [illegible], [illegible] to bulge [illegible] (of [illegible] of arrector muscle), to hair and to apocrine gland.

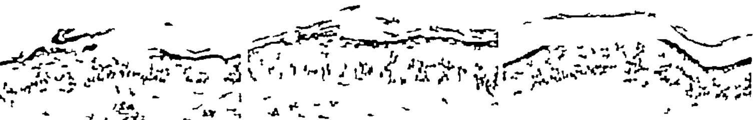





FORCED REGENERATION
MODIFICATIONS
1. Last strip left in place
2. Plain ointment applied
3. Vitamin A ointment applied
Loss of c ll and dehydration ?) appears to be primary stimulus

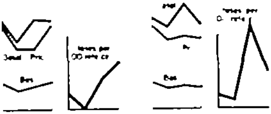


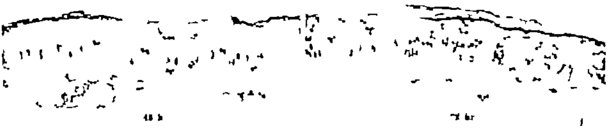

Basal Prickle



48 h

72 h





Electron Therapy in Skin Diseases.

MAGNUS I SMEDAL, JOHN L. FROMER, DONAT P CYR, and JOHN G TRUMP the Lahey Clinic, Boston and KENNETH A. WRIGHT Massachusetts Institute of Technology Cambridge, Mass

Electrons with controllable energies up to several millions of volts have unique properties for the treatment of skin diseases. The exhibit illustrates the physical properties of directed streams of electrons compares their dose distribution below the skin with that of other radiation sources, such as beta r y and soft x-rays and shows how electron therapy can be applied to the patient. Clinical results on extensive skin lymphomas (mycosis fun oi s) topic dermatitis exfoliative dermatitis, keloids, and squamous ell a noma are illustrated.

MYCOSIS FUNGOIDES

PRESENT T EA M N PLAN

[illegible] HEMATOLOGIST

[illegible] BEFORE [illegible]

RULE OUT LYMPHOMA

BIOPSY

[illegible]

[illegible] COST AT M.I.T.

[illegible]

SUBSEQUENT [illegible]

[illegible] BODY AREAS

SMALL LESIONS [illegible]

[illegible]

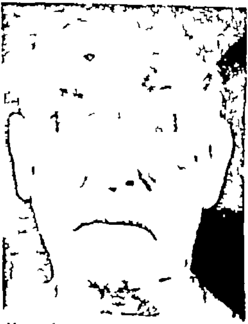
SKIN REACTIONS

I NORMAL SKIN

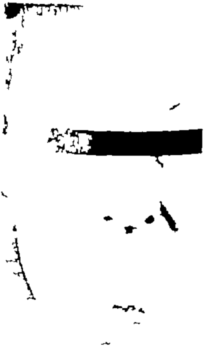
[illegible]

II. DISEASED SKIN

[illegible]

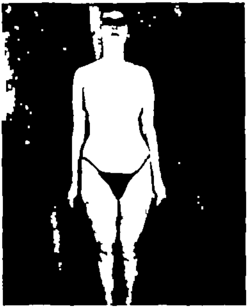


Mycos f ngo des exfoliativ type of three ears' duration n pat ent aged 58

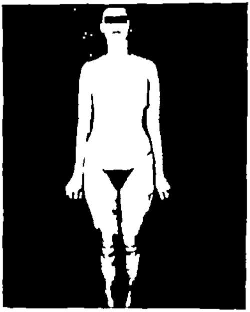


PANEL I

MYCOSIS FUNGOIDES



Mycosis fungoides, plaque type of 17 years' duration l patient aged 53.

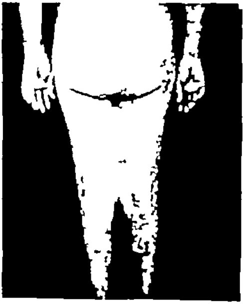


Same patient six months after treatment with 600 rep.

PANEL I

Left, mycosis fungoides, tumor type, of six years duration l patient aged 52.

Right, same patient eight weeks after treatment with 800 rep.

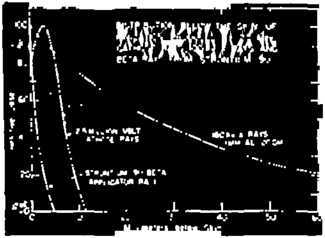


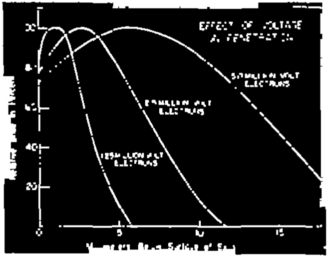
Mycosis fungoides, nodular type, of 30 years duration in patient aged 53.

Same patient eight months with 600 rep in July 195 September 1954.

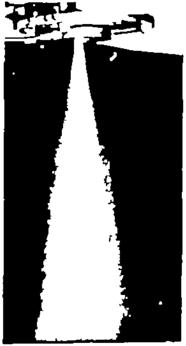
PANEL II

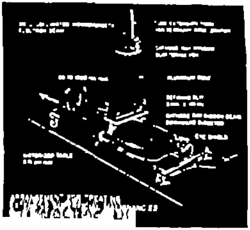
PHYSICAL ASPECTS

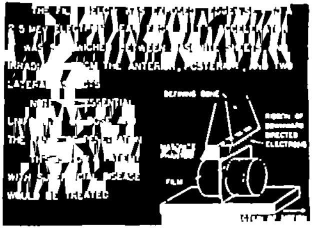


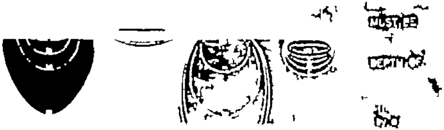


A BEAM OF 3 MEV ELECTRONS EMERGING INTO AIR FROM THE TUBE OF THE VAN DE GRAAFF ELECTROSTATIC ACCELERATOR AT THE MASS. INST. OF TECHNOLOGY









MISCELLANEOUS DERMATOSES

SUMMARY OF RESULTS

DISEASE	TOTAL CASES	SKIN RESPONSE Good	Improved	Failure	REMARKS
MYCOSIS FUNGOIDES	47	30			[illegible]
LYMPHOMA CUTI [illegible]		1	6		
DISSEMINATED NEURODERMATITIS	6		3		
EXFOLIATIVE DERMATITIS	6	1	6	2	[illegible]
ATOPIC DERMATITIS			2		
GENERALIZED PSORIASIS	1	1			[illegible]
KELOID	15				
KAPOSI'S SARCOMA		2	2		[illegible]
ACNE		[illegible]			
CUTANEOUS MALIGNANCY		[illegible]		[illegible]	
MISCELLANEOUS	10				

HEMATOLOGICAL OBSERVATIONS
IN PATIENTS TREATED WITH CATHODE RAY TOTAL BODY IRRADIATION

1. ANALYSIS OF [illegible] PATIENTS

[illegible]	[illegible]	No Change	[illegible]
MYCOSIS FUNGOIDES	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]

2. FOLLOW-UP: [illegible] TO [illegible] MONTHS (AVERAGE [illegible] MONTHS)

3. CATHODE RAY IRRADIATION

[illegible] PATIENTS RECEIVED ONE TOTAL BODY TREATMENT
PATIENTS RECEIVED [illegible] TOTAL BODY TREATMENTS
ALL PATIENTS RECEIVED ONE OR SEVERAL SPOT AND/OR SEGMENTAL TREATMENTS

NATURE OF HEMATOLOGIC FINDINGS [illegible]

NEUTROPENIA, MILD AND TRANSIENT ____
ANEMIA AND NEUTROPENIA ____
PANCYTOPENIA
[illegible] ____
SEVERE
[illegible]
[illegible]

PANEL III

Disseminated neurodermatitis of six months duration in patient aged 59.

Same patient six months after treatment with 750 rep.

I vast epidermoid carcinoma growi g rapidly in patient aged 80.

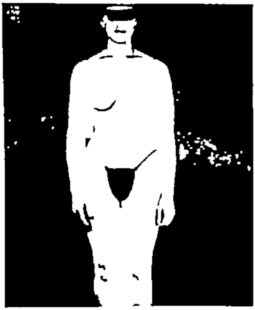
Same patient, initial result, two months treatment with 4800 rep 2.5 mev

PANEL III

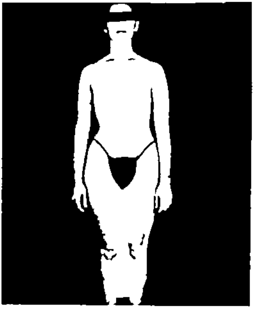
MISCELLANEOUS DERMATOSES

Kaposi's sarcoma of 8 years duration in patient aged 68. There had been previous x-ray therapy

Same patient 14 months after treatment with 1000 rep plus 400-800 rep to spots, and 800 r x ray with 2.0 mev plus 200-400 r spots.



Atopic dermatitis of lifetime duration in patient aged 28. There had been failure on routine dermatological treatment.



Same patient 17 months after treatment with 450 to 600 rep.

Simplified Office Mycology

HARRY M ROBINSON JR. MORRIS M COHEN and EUGENE S BERESTON University of Maryland School of Medicine, Baltimore.

This exhibit consists of charts, Kodachromes, and a step by step method of procedure for the preparation, sterilization utilization and disposal of a culture medium for fungus infections. The entire procedure is simple and inexpensive and may be routinely conducted in the physician's office. A simple method of sterilization by the use of a home pressure-cooker is demonstrated. The Ink-KOH stain is prepared and demonstrated in the exhibit booth.

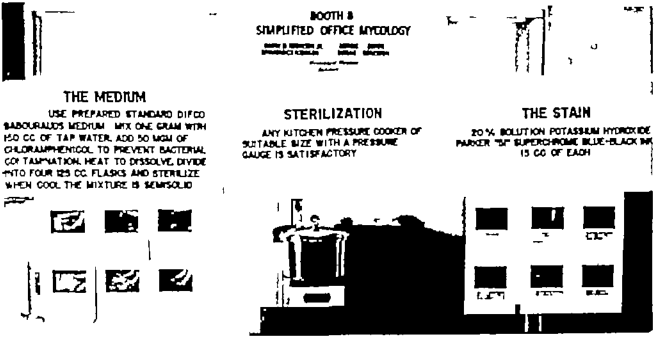
THE APPROXIMATE COST OF THE PREPARED MEDIUM IS 3½ CENTS PER FLASK. THE CULTURAL CHARACTERISTICS ARE SIMILAR TO THOSE OBSERVED ON SOLID MEDIA. DISPOSAL OF USED MEDIUM AND CARE OF EQUIPMENT IS SIMPLE AND PRACTICAL.

[illegible]

M GYPSEUM

[illegible]

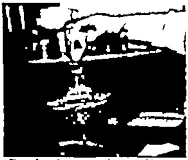
[illegible]



THE MEDIUM

USE PREPARED STANDARD DIFCO SABOURAUDS MEDIUM MIX ONE GRAM WITH 150 CC OF TAP WATER ADD 50 MGM OF CHLORAMPHENICOL TO PREVENT BACTERIAL CONTAMINATION HEAT TO DISSOLVE DIVIDE INTO FOUR 125 CC FLASKS AND STERILIZE WHEN COOL THE MIXTURE IS SEMISOLID

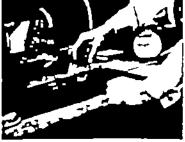
Weight standard Sabouraud powdered medi m placing 1 gm of dried medium in glassine or paper em lopes fo storage pu poses.



Dissolv 1 gm packet in 150 cc. of tap water nd rm over bunsen burner til solution is complete.

Divide mixt re int fou flasks and sterilize by boiling over bunsen burner for 10 minutes or by pressure sterilization in pressure cooker.

Inoculat medium hen ool Store used medium i ef ig erator

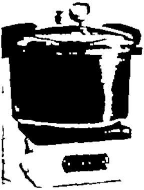


Dispose of cult res when iden tified by adding some water t flask nd rinsing contents into office lavoratory or other large drain.

Cleanse flask and reuse.

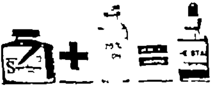
STERILIZATION

ANY KITCHEN PRESSURE COOKER OF SUITABLE SIZE WITH A PRESSURE GAUGE IS SATISFACTORY



THE STAIN

20 % SOLUTION POTASSIUM HYDROXIDE
PARKER "51" SUPERCHROME BLUE-BLACK INK
15 CC OF EACH



The stain. Use equal parts of Parker Superchrome blue-black ink and 20 per cent KOH solution.

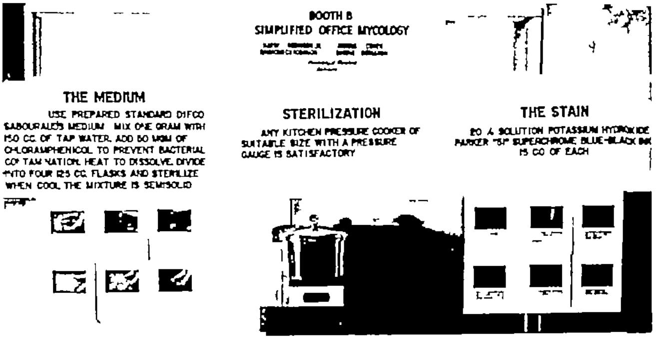
Place scales on slide and drop of the stai cover ith glass, bsorb excess stai ith blotter and ex mine immediately

H ir specimens may be exam ined in the same manner

Culture mounts re prepared in the same manner.

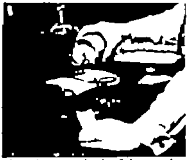
Stain may be applied to these in situ.

Examine der m



THE MEDIUM

USE PREPARED STANDARD DIFCO SABOURAUDS MEDIUM MIX ONE GRAM WITH 150 CC OF TAP WATER ADD 50 MGM OF CHLORAMPHENICOL TO PREVENT BACTERIAL CONTAMINATION HEAT TO DISSOLVE DIVIDE INTO FOUR 125 CC FLASKS AND STERILIZE WHEN COOL THE MIXTURE IS SEMISOLID

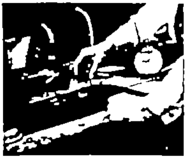


Weight standard Sabouraud powdered medium placing 1 gm of dried medium in glassine or paper en lopes for storage pu poses.

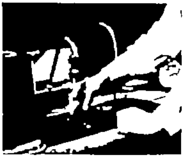
Dissolv 1 gm packet 150 cc. of tap water nd warm over bunsen burner ntil sol tion is complet

Divide mixture int fou flasks and sterilize by boiling over bunsen burner for 10 minutes or by pressure sterilization in a pressure cooker

Inoculat medium when cool Store unused medi m in efrig-erator



Dispose of cultures when iden-tified by adding some water to flask nd rinsing contents into office lavoratory or other large drain.



Cleanse flask nd reuse.

SECTION ON DISEASES OF THE CHEST

The Morphology of the Heart Before

CONRAD R. LAM, LEO F. KENNEY, JOHN W.
and ROBERT F. ZIEGLER, Detroit.

The indications and technics for operation ... established for the following four pathologic ... stenosis, interatrial septal defect, mitral stenosis, ... soon be added the interventricular septal defect, ... mitral and aortic valves.

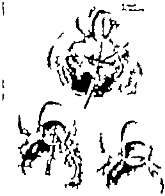
The heart which is involved with one of the ... a more or less typical deviation from the normal ... of certain chambers and great vessels, and perhaps ... In addition to the specific valvular or septal ... of the defect, the heart may show remarkable ...

The morphology of the living heart is made evident ... and by direct observation at the time of operation. ... features of the hearts in this exhibit were made to ... cardiac silhouettes in the roentgenograms. All of the ... Elton Hoff in charge of the Department of Medical ... Hospital.

Roentgenogram of non-cyanotic child, age 4 years, ... harsh systolic murmur over the pulmonic valve.

Roentgenogram of same child two years later. Note the large right auricle and ventricle and the aneurysmal dilatation of the pulmonary artery which has become more evident over the two year period. The electrocardiogram shows right ventricular hypertrophy, and cardiac catheterization reveals high right ventricular pressure and low pulmonary artery pressure.

Artist's ... 2. Attention is called to the ... auricle, the hypertrophy of ... ventricle, and the dilated ... monary artery, which is ... jet of blood passing through ... orifice (post-stenotic dilatation ...



Details of the anatomy of the pulmonary valve before and after corrective operation. The valve is dome shaped with ... opening. The right ventricular outflow tract (...) which commonly involved in tetralogy of Fallot is not ... shown is that of Sir Russell Brock of London. The ... the insertion of valvulotome through the ventricle ... the valve so as to make it ... The ... particular drawing is the adjustable valvulotome of ...

R ntgenogram of he h mic at d defe The hea large ng nlargement of ll of he om partments of he right side

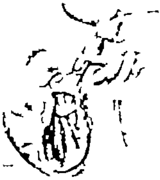
A ist onception of he he h nt at l defe Not he dilated right at ium hich contains ox gen ated blood because of he lef to right shunt from he lef at ium. The right entricle and pulmonary artery g atly enlarged.

Repair of septum secund m defec by losed technic using wo pointed needle After he dissect ion of he pulmonary eins from he right atrium (method of Sondergaard) he left forefinger guides he needle through he edges of he defe Only point permitted to emerge from he medial atrial all before he direct ion reversed to rry the suture back posteriorly The repair of ertain omplicated defect requires opening he heart nder hypothermia

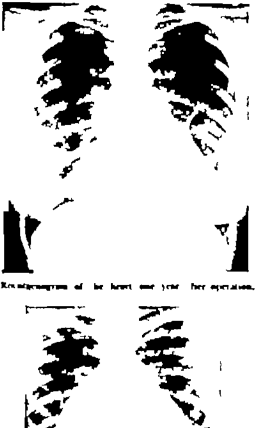
Postoperativ roentgenogram one yea fter losure of defec Note he diminution in size of he right atrium.

Above left. Roentgenogram of heart [illegible] severe mitral stenosis. Note that [illegible] is not extremely large [illegible] ventricular hypertrophy is limited to the right side. The dilatation of the left auricular appendage makes [illegible] definite bulge along the left cardiac border.

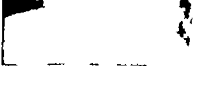
Above right. Artist's conception of the heart [illegible] pure mitral stenosis.



Above. Mitral commissurotomy [illegible] the Bailey Clover [illegible] [illegible] inserted through the [illegible] [illegible] appendage.



Roentgenogram of the heart one year after operation.



Lower right. Roentgenogram of heart with mitral insufficiency proved by exploration. The left ventricular hypertrophy produces an entirely different picture from that seen in pure mitral stenosis.

Roentgenogram of he h l defe The hear large owing to nlargement of all of he com ponents of he right side

A at ent ation of he hea h recta al defe Note he d lated right at um hich ontains ox ge ated blood because of he left to right shunt from he lef at um. The right ntricle and pulmonary ery ar g atly enlarged.

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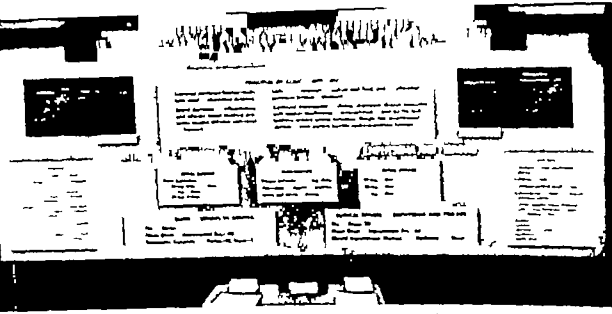
HONORABLE MENTION

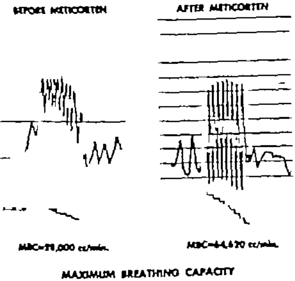


Prednisone in Bronchial Asthma, Pulmonary Emphysema, and Pulmonary Fibrosis.

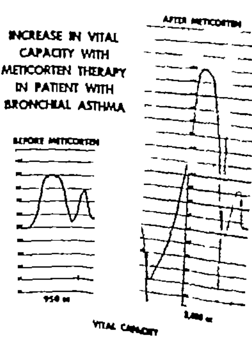
Alvan L. Barach Hylan A. Bickerman and Gustav J Beck, Columbia-Presbyterian Medical Center New York.

Clinical results of the use of prednisone in 80 patients with bronchial asthma and pulmonary emphysema included conspicuous relief of dyspnea, often within 24 to 48 hours maintenance of remission in most cases on a regimen of 10 to 30 mg. daily and absence of edema on a diet without salt restriction. The diminution of shortness of breath on exertion in pulmonary emphysema, with and without cor pulmonale, was conspicuous. Improvement in respiratory function tests was recorded. Of special interest was the finding of diminished dyspnea associated with diuresis and weight loss in some cases of pulmonary fibrosis

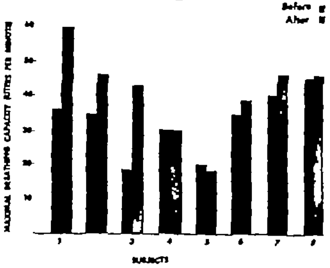
INCREASE IN MAXIMUM BREATHING CAPACITY WITH METICORTEN THERAPY IN PATIENT WITH BRONCHIAL ASTHMA



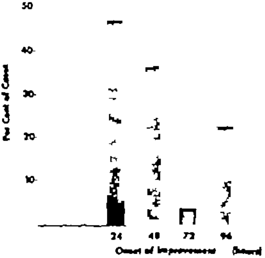
INCREASE IN VITAL CAPACITY WITH METICORTEN THERAPY IN PATIENT WITH BRONCHIAL ASTHMA



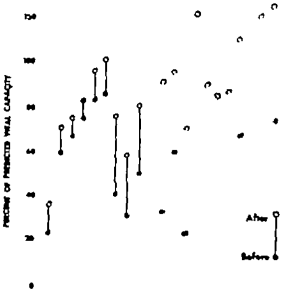
EFFECT OF METICORTEN THERAPY ON THE MAXIMAL BREATHING CAPACITY IN 8 PATIENTS WITH BRONCHIAL ASTHMA



THE TIME-RELATIONSHIP OF THE ONSET OF SUBJECTIVE IMPROVEMENT FOLLOWING THE ADMINISTRATION OF METICORTEN IN 30 PATIENTS WITH BRONCHIAL ASTHMA



THE EFFECT OF METICORTEN ON THE VITAL CAPACITY OF 21 PATIENTS WITH BRONCHIAL ASTHMA



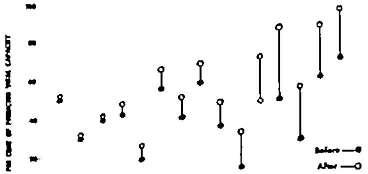
Special Advantages of Meticorten Therapy

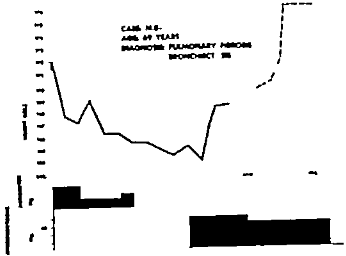
1 More rapid clinical relief of dyspnea
2 Lower dosage requirement as compared with hydrocortisone (1 4)
3 Weight loss averaging 6 pounds in 5 patients who changed from cortisone to Meticorten (prednisone)
4 Weight loss in 6 cases of pulmonary fibrosis not previously treated with cortisone occurring simultaneously with clinical improvement Subsequent use of hydrocortisone in one case followed by marked gain in weight on low salt diet
5 Decrease in moon appearance of face (9 cases) decrease in girdle adiposity (2 cases)

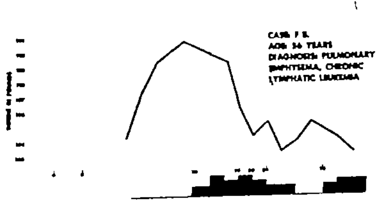
Side Effects Noted with Meticorten Therapy

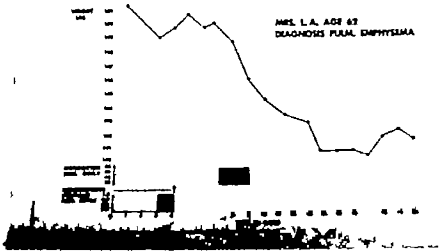
1 Headache — 4 cases spontaneously disappearing in 3
2 Dizziness — 3 cases.
3 Increased emotional tension — 3 cases
4 Exacerbation of latent sino-broncho-pulmonary infection.
5 Gastro-intestinal distress Distention and pain — 9 cases Reactivation of peptic ulcer with bleeding — 2 cases.

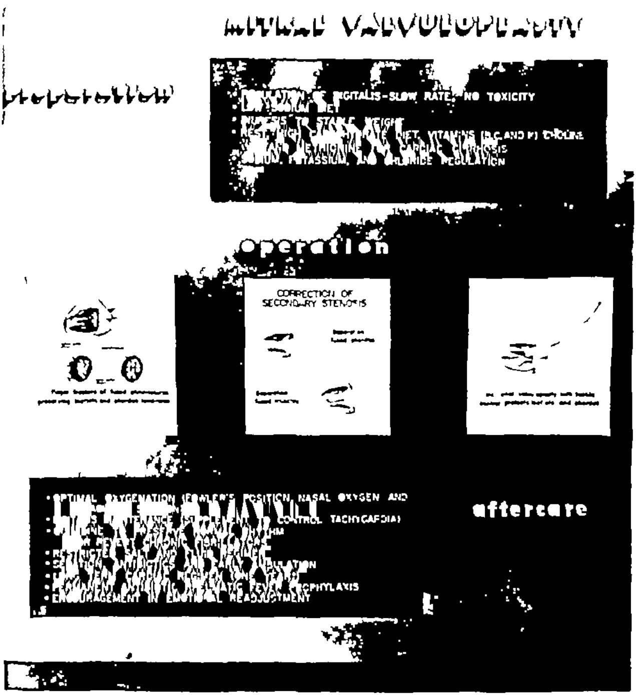
THE EFFECT OF METICORTEN ON THE VITAL CAPACITY OF 15 PATIENTS WITH PULMONARY EMPHYSEMA



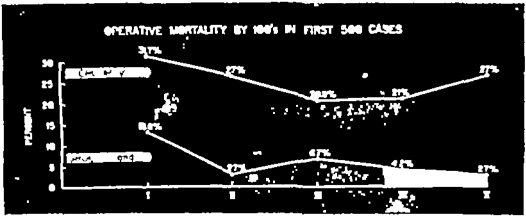


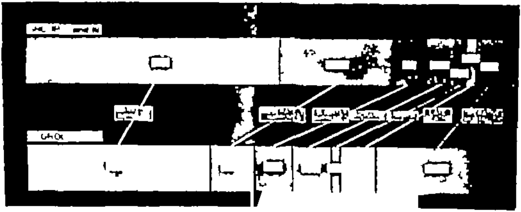






DIGITALIS-SLOW RATE, NO TOXICITY
VITAMINS (B,C AND K) CHOLINE
CARDIAC CIRRHOSIS
POTASSIUM, AND CHLORIDE REGULATION
operation
CORRECTION OF SECONDARY STENOSIS
aftercare
OPTIMAL OXYGENATION (FOWLER'S POSITION, NASAL OXYGEN AND
CONTROL TACHYCARDIA)
PROPHYLAXIS
ENCOURAGEMENT IN EMOTIONAL READJUSTMENT


OPERATIVE MORTALITY BY 100's IN FIRST 500 CASES
PERCENT
30
25
20
15
10
5
0

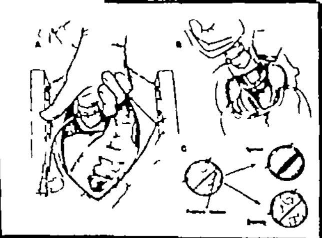


DIFFERENTIAL DIAGNOSIS

AORTIC STENOSIS

pathology

operation



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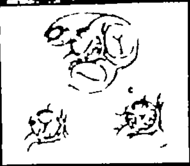
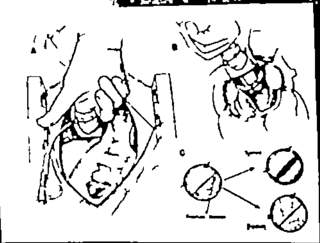


operation



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Julius L. Wilson, American Trudeau Society New York.

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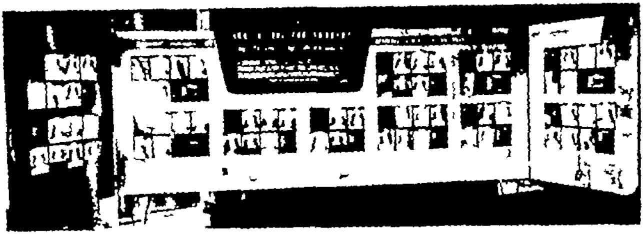

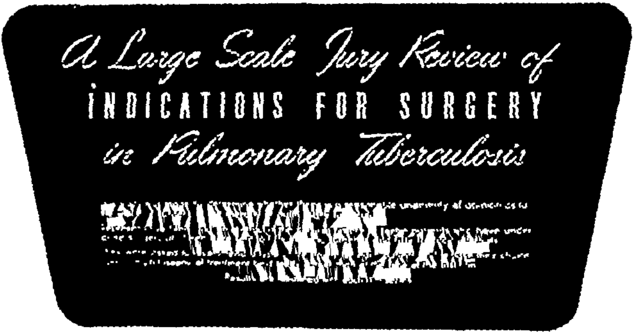

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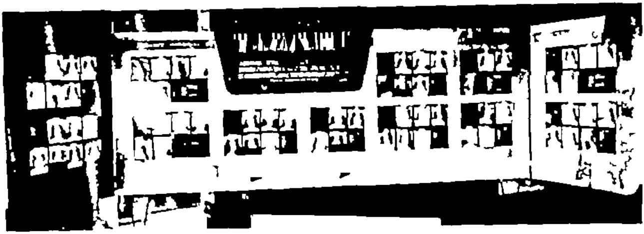

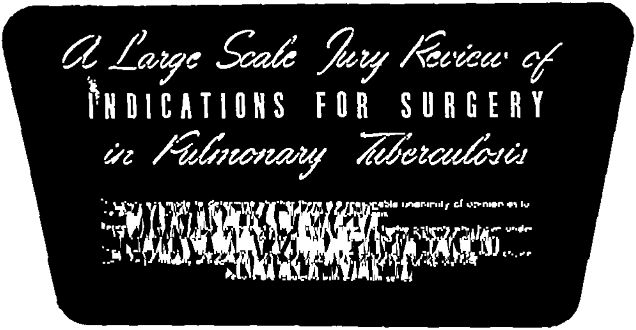

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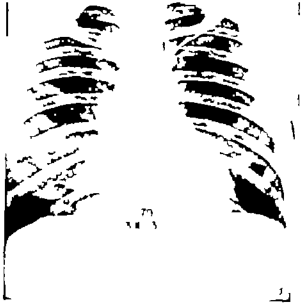


CASE NO. 1

TREATMENT OF AN INSPISSATED 1 5 CM CAVITY WITH NEGATIVE SPUTUM

TREATMENT	SURGEONS NO.	SURGEONS PER CENT	INTERNISTS NO	INTERNISTS PER CENT	TOTAL NO.	TOTAL PER CENT
WEDGE OR SUBSEGMENTAL RESECTION	2	4	1	1 9	3	2 9
SEGMENTAL RESECTION	23	46	24	45 3	47	45 6
WITHOUT FURTHER THERAPY	(22)		(24)			
WITH CONCOMITANT THORACOPLASTY	(1)		(0)			
RESECTION, TYPE NOT STATED	0		2	3 8	2	2 0
RANDOMIZE FOR RESECTION	1	2	0		1	1 0
THORACOPLASTY ALEXANDER TYPE	1	2	0		1	1 0
NO SURGERY	23	46	26	49 0	49	47 5
TOTAL	50	100	53	100 0	103	100 0

CASE NO. 2

31 YEAR-OLD WHITE MALE.

ONSET OF DISEASE: FEBRUARY 1950

TREATMENT:

STREPTOMYCIN, 1 GM. TWICE WEEKLY 4-10 51 TO 8-1 51
PAS, 12 GM. DAILY

PNEUMOPERITONEUM, 9 5-50 TO 4 17 51

RESISTANCE STUDIES:

1 51: STREPTOMYCIN, LESS THAN 10 MCG./ML.

UM:

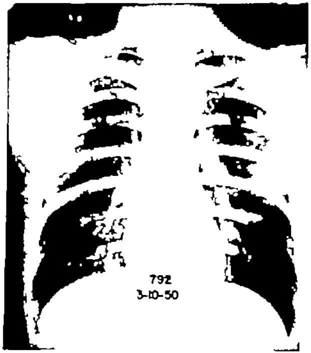
T POSITIVE FOR AFB ON 5-1 51 BY CULTURE.

BRONCHOSCOPY

4-23 51 NEGATIVE

COURSE:

NO DRUG THERAPY WAS GIVEN THIS PATIENT OTHER THAN THAT NOTED ABOVE. LESION IN RIGHT UPPER LOBE REVEALED NO IDENCE OF CAVITATION ON PLANIGRAMS ON 8 1 51



794
10-17 50

795
3-23-51

796
5-1-51

CASE NO 2

TREATMENT OF RECURRENCE OF A PREVIOUSLY DISPIRATED CAVITY WITH POSITIVE SPUTUM

TREATMENT	SURGEONS NO.	SURGEONS PER CENT	INTERNISTS NO	INTERNISTS PER CENT	TOTAL NO.	TOTAL PER CENT
WEDGE OR SUBSEGMENTAL RESECTION	4	8	4	7.5	8	7.8
SEGMENTAL RESECTION	37	74	31	58.5	68	66.0
WITHOUT FURTHER THERAPY	(34)		(25)			
AFTER FURTHER DRUG THERAPY	(3)		(6)			
LOBECTOMY	2	4	6	11.4	8	7.8
WITHOUT FURTHER THERAPY	(1)		(3)			
AFTER FURTHER DRUG THERAPY	(1)		(3)			
RESECTION TYPE NOT STATED	4	8	7	13.2	11	10.6
WITHOUT FURTHER THERAPY	(2)		(5)			
AFTER FURTHER DRUG THERAPY	(2)		(2)			
NO SURGERY	3	6	5	9.4	8	7.8
TOTAL	50	100	53	100.0	103	100.0

CASE NO. 3

20-YEAR-OLD NEGRO MALE.

ONSET OF DISEASE: JULY 1951

TREATMENT

STREPTOMYCIN 1 GM. TWICE WEEKLY PAS, 12 GM. DAILY	9 14 51 TO 7 14 52
PNEUMOPERITONEUM.	9-21 51 TO 7 14-52

RESISTANCE STUDIES

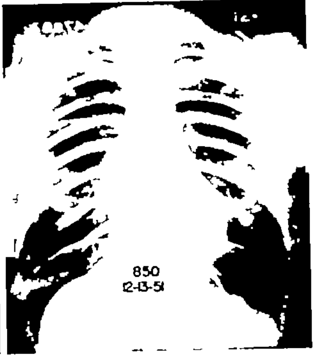
NONE

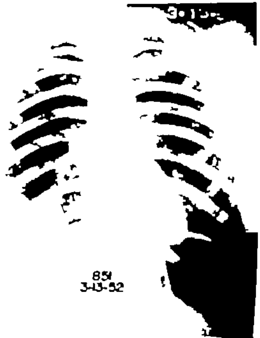
SPUTUM

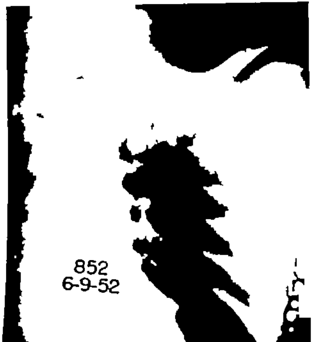
LAST POSITIVE SPUTUM WAS ON 9-21 51

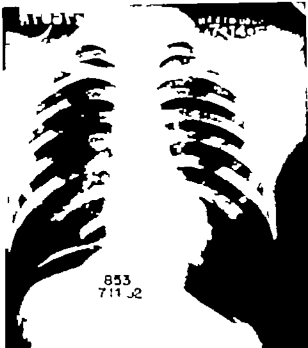
BRONCHOSCOPY

7-24-52: NEGATIVE.









CASE NO 3

TREATMENT OF INSPISSATED 3 CM CAVITY
WITH NEGATIVE SPUTUM

TREATMENT	SURGEONS NO	SURGEONS PER CENT	INTERNISTS NO	INTERNISTS PER CENT	TOTAL NO	TOTAL PER CENT
WEDGE OR SUBSEGMENTAL RESECTION	3	6	0		3	2 9
SEGMENTAL RESECTION	33	66	23	43 4	56	54 4
LOBECTOMY	4	8	6	11 3	10	9 7
RESECTION, TYPE NOT STATED	2	4	5	9 4	7	6 8
RANDOMIZE THIS TYPE CASE	2	4	0		2	1 9
NO SURGERY	6	12	19	35 9	25	24 3
TOTAL	50	100	53	100 0	103	100 0

CASE NO 4

33 YEAR-OLD WHITE MALE.

ONSET OF DISEASE JANUARY 1947

TREATMENT

STREPTOMYCIN 1 GM. TWICE WEEKLY — 9 9 52 TO 7 3-53
PAS 12 GM DAILY

STREPTOMYCIN, 1 GM TWICE WEEKLY — 7 25 53 TO 1 29 54
ISONIAZID, 300 MGM. DAILY

PNEUMOPERITONEUM, — MAY 1947 TO JULY 1951

PHRENIC NERVE CRUSH, LEFT — MAY 1947

RESISTANCE STUDIES

12 14 53 STREPTOMYCIN 10 MCG /ML.
ISONIAZID, LESS THAN 10 MCG. /ML.

SPUTUM

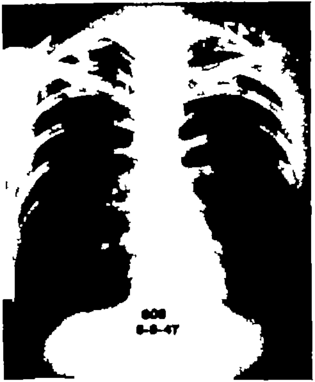
LAST POSITIVE FOR AFB BY SMEAR 1 4 54

BRONCHOSCOPY

1 28 54 NORMAL.

COURSE

PLANIGRAMS OF LEFT APEX WERE REPORTED NEGATIVE FOR
CAVITATION ON 1 11 54



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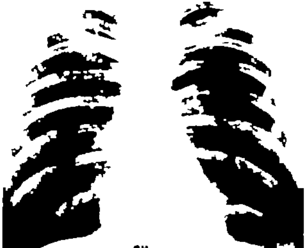
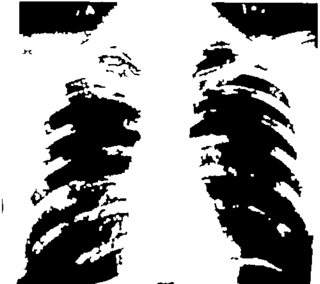
7-8-53



811
7 28-53

812
1-8-54



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1-29-54

CASE NO. 4

TREATMENT OF OPEN CAVITY WITH POSITIVE SPUTUM AND PARTIAL DRUG RESISTANCE

TREATMENT	SURGEONS		INTERNISTS		TOTAL	
	NO	PER CENT	NO	PER CENT	NO.	PER CENT
WEDGE OR SUBSEGMENTAL RESECTION	0		1	1.9	1	1.0
SEGMENTAL RESECTION	27	54	21	39.6	48	46.6
WITHOUT FURTHER THERAPY	(25)		(21)			
WITH CONCOMITANT THORACOPLASTY	(1)		(0)			
AFTER FURTHER DRUG THERAPY	(1)		(0)			
LOBECTOMY	13	26	17	32.1	30	29.2
WITHOUT FURTHER THERAPY	(9)		(15)			
AFTER FURTHER DRUG THERAPY	(0)		(1)			
WITH CONCOMITANT THORACOPLASTY	(2)		(1)			
WITH SUBSEQUENT THORACOPLASTY	(1)		(0)			
ALSO PNEUMOPERITONEUM	(1)		(0)			
BILATERAL RESECTION	3	6	5	9.4	8	7.7
WITHOUT FURTHER THERAPY	(3)		(4)			
AFTER FURTHER DRUG THERAPY	(0)		(1)			
RESECTION, TYPE NOT STATED	5	10	4	7.5	9	8.7
WITHOUT FURTHER THERAPY	(4)		(4)			
WITH PRIOR PLOMBAGE THORACOPLASTY	(1)		(0)			
THORACOPLASTY	2	4	5	9.5	7	6.8
ALEXANDER	(0)		(3)			
PAULINO	(1)		(0)			
PLOMBAGE	(1)		(2)			
TOTAL	50	100	53	100.0	103	100.0

CASE NO 5

29 YEAR-OLD WHITE MALE.

ONSET OF DISEASE: JULY 1952.

TREATMENT

STREPTOMYCIN, 1 GM. TWICE WEEKLY PAS, 12 GM. DAILY	8-9 52 TO 8-26 52 UNABLE TO TAKE PAS DUE TO NAUSEA AND DIARRHEA.
STREPTOMYCIN 1 GM. TWICE WEEKLY	8-27 52 TO 11-8-52
ISONIAZID, 150 MGM. DAILY	10-8 52 TO 10 15 52
ISONIAZID 300 MGM. DAILY, STREPTOMYCIN 1 GM. TWICE WEEKLY PAS 12 GM. DAILY	11 12 52 TO 11-4 53 DISCONTINUED DUE TO RESISTANCE TO DRUGS.
VIOMYCIN 1 GM. WEEKLY	11 5-53 TO 1-26 54 DISCONTINUED DUE TO RESISTANCE TO DRUGS.
PNEUMOPERITONEUM	9-29 52 TO 1 25 54

RESISTANCE STUDIES-

11 9 53	STREPTOMYCIN	10 MCG /ML.
	PAS,	100 MCG /ML.
	ISONIAZID	5 MCG /ML.
	VIOMYCIN	50 MCG /ML.

SPUTUM:

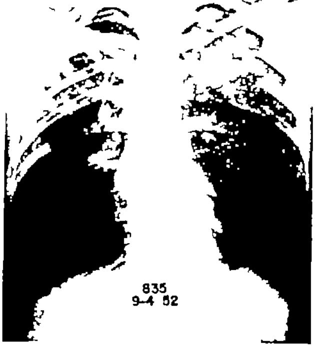
LAST POSITIVE FOR AFB ON 11 6 53 BY CULTURE AND SMEAR

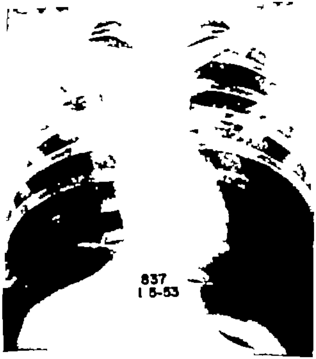
BRONCHOSCOPY:

2 15-54. NEGATIVE.

COURSE:

SPREAD OF DISEASE OCCURRED BILATERALLY DURING STREPTOMYCIN THERAPY IN OCTOBER 1952 PLANIGRAMS ON 1-25-54 REVEALED NO EVIDENCE OF CAVITATION IN LEFT LUNG. HAS HAD NO DRUG THERAPY SINCE 1-26 54





CASE NO. 5

TREATMENT OF OPEN CAVITY WITH NEGATIVE SPUTUM AND BACTERIAL RESISTANCE

TREATMENT	SURGEONS		INTERNISTS		TOTAL	
	NO.	PER CENT	NO.	PER CENT	NO.	PER CENT
WEDGE OR SUBSEGMENTAL RESECTION	2	4	2	3.8	4	3.9
AFTER FURTHER DRUG THERAPY	(0)		(1)			
WITH PRIOR THORACOPLASTY	(1)		(1)			
WITH CONCOMITANT THORACOPLASTY	(1)		(0)			
SEGMENTAL RESECTION	0		4	7.5	4	3.9
LOBECTOMY	21	42	20	37.7	41	39.8
WITHOUT FURTHER THERAPY	(14)		(14)			
WITH PRIOR THORACOPLASTY	(0)		(1)			
WITH PRIOR AND CONCOMITANT THORACOPLASTY	(1)		(0)			
WITH CONCOMITANT THORACOPLASTY	(4)		(4)			
WITH SUBSEQUENT THORACOPLASTY	(1)		(0)			
WITH POSTOP PNEUMOPERITONEUM	(1)		(1)			
LOBECTOMY PLUS WEDGE OR SEGMENT	7	14	1	1.9	8	7.8
WITHOUT FURTHER THERAPY	(2)		(1)			
WITH CONCOMITANT THORACOPLASTY	(4)		(0)			
WITH SUBSEQUENT THORACOPLASTY	(1)		(0)			
RESECTION TYPE NOT STATED	4	8	2	3.8	6	5.8
WITHOUT FURTHER THERAPY	(2)		(2)			
WITH PRIOR PLOMBAGE THORACOPLASTY	(1)		(0)			
WITH CONCOMITANT THORACOPLASTY	(1)		(0)			
BILATERAL RESECTION	0		2	3.8	2	1.9
THORACOPLASTY	16	32	18	34.0	34	33.0
PLOMBAGE TYPE	(5)		(7)			
ALEXANDER TYPE	(11)		(10)			
AFTER URTHER DRUG TREATMENT	(0)		(1)			
NO SURGERY	0		4	7.6	4	3.9
TOTAL	50	100	53	100.0	103	100.0

CASE NO 6

19 YEAR-OLD WHITE MALE.

ONSET OF DISEASE. JULY 1953

TREATMENT

STREPTOMYCIN 1 GM TWICE WEEKLY 9 28 53 TO 7 30 54
ISONIAZID 300 MGM. DAILY

RESISTANCE STUDIES

12 1 54 STREPTOMYCIN 10 MCG. /ML.

SPUTUM

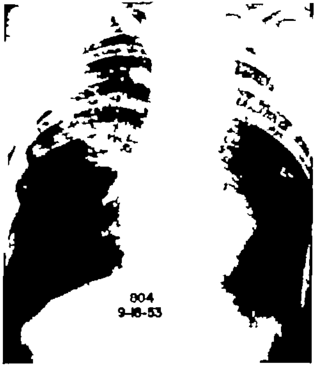
LAST POSITIVE FOR AFB ON 2 10-54 BY CULTURE.

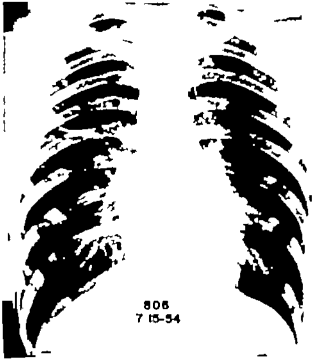
BRONCHOSCOPY

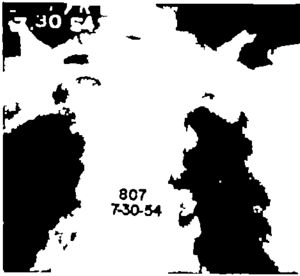
7-2 54 NEGATIVE.

COURSE

CONTINUED IMPROVEMENT IN BILATERAL PULMONARY DISEASE EXCEPT FOR CAVITATION IN LEFT APEX. PLANIGRAMS RIGHT LUNG WERE REPORTED NEGATIVE.







CASE NO. 7

37 YEAR OLD NEGRO MALE.

ONSET OF DISEASE: AUGUST 1950

TREATMENT

STREPTOMYCIN 1 GM. DAILY PAS, 12 GM. DAILY	10 20 50 TO 4 13 51
STREPTOMYCIN, 1 GM. TWICE WEEKLY PAS 12 GM DAILY	2 26 52 TO 3 3-52 3-4 52 TO 6 3 52
ISONIAZID 150 MGM DAILY	3-4 52 TO 6 3 52
STREPTOMYCIN, 1 GM TWICE WEEKLY PAS 12 GM. DAILY	6-4-52 TO 7 31 52
STREPTOMYCIN 1 GM. TWICE WEEKLY PAS 12 GM. DAILY	11-4 52 TO 9 22 53
PNEUMOPERITONEUM	DECEMBER 1950 TO DECEMBER 1951

RESISTANCE STUDIES

7 10 53	STREPTOMYCIN	100 MCG /ML.
	PAS	100 MCG /ML.
	ISONIAZID	1 MCG /ML.

SITIVE SPUTUM ON 7 10 53 BY CULTURE.

OSCOPY

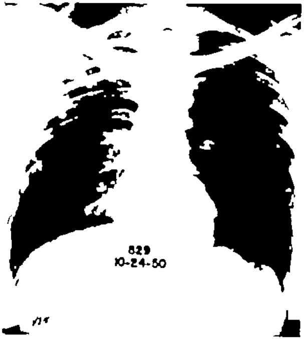
EGATIVE.

SPREAD OF DISEASE OCCURRED IN FEBRUARY 1952 NO CAVITATION WAS PRESENT IN LEFT LUNG ON PLANI 10 8 18 53

CASE NO 6

TREATMENT OF THE SO-CALLED ISONIAZID CAVIT

TREATMENT	SURGEONS				INTERNISTS				TOTAL	
	NO		PER CENT		NO		PER CENT		NO.	PER CENT
WEDGE OR SUBSEGMENTAL RESECTION	0				1		1 9		1	1 0
SEGMENTAL RESECTION	23		46		26		49 1		49	47 5
WITHOUT FURTHER THERAPY		(21)				(24)				
AFTER FURTHER DRUG THERAP		(1)				(0)				
WITH CONCOMITANT THORACOPLASTY		(1)				(0)				
WITH PRIOR THORACOPLASTY		(0)				(1)				
WITH POSTOP PNEUMOPERITONEUM		(0)				(1)				
LOBECTOMY	18		36		15		28 3		33	32 0
WITHOUT URTHER THERAPY		(10)				(12)				
AFTER FURTHER DRUG THERAPY		(0)				(1)				
WITH PRIOR ALEXANDER THORACO PLASTY		(1)				(0)				
WITH PRIOR PLOMBAGE THORACO PLASTY		(1)				(0)				
WITH CON OMITANT THORACOPLAST		(6)				(1)				
WITH SUBSEQUENT THO ACOPLASTY		(0)				(1)				
RESECTION TYPE NOT STATED	2		4		5		9 4		7	6 8
WITHOUT URTHER THERAPY		(1)				(4)				
AFTER FURTHER DRUG THERAPY		(0)				(1)				
WITH CONCOMITANT THORACOPLASTY		(1)				(0)				
BILATERAL RESECTION	0				1		1 9		1	1 0
THORACOPLASTY	3		6		4		7 5		7	6 8
ALEXANDER		(1)				(3)				
PLOMBAGE		(2)				(1)				
NO SURGERY	4		8		1		1 9		5	4 9
TOTAL	50		100		53		100 0		103	100 0



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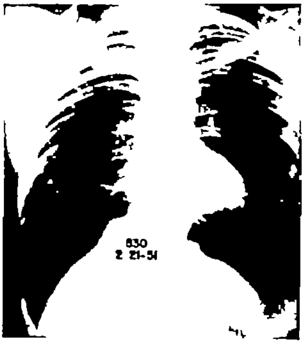
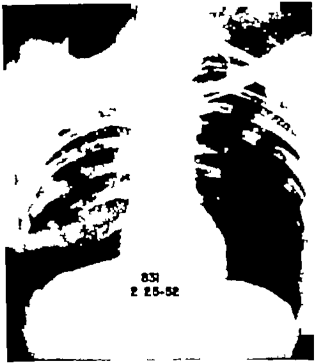
10-24-50



830
2 21-51



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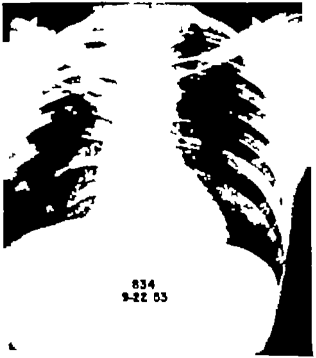
2 25-52



834
9-22 53

833
8-18-53

CASE NO. 7

TREATMENT OF OPEN CAVITY WITH POSITIVE SPUTUM
AND BACTERIAL RESISTANCE

TREATMENT	SURGEONS NO	SURGEONS PER CENT	INTERNISTS NO.	INTERNISTS PER CENT	TOTAL NO	TOTAL PER CENT
SEGMENTAL RESECTION	1	2	0		1	1 0
LOBECTOMY	36	72	41	77 4	77	74 6
WITHOUT FURTHER THERAPY	(23)		(27)			
AFTER FURTHER DRUG THERAPY	(1)		(1)			
PRIOR ALEXANDER THORACOPLASTY	(2)		(1)			
PRIOR PLOMBAGE THORACOPLASTY	(1)		(1)			
WITH CONCOMITANT THORACOPLASTY	(8)		(6)			
AFTER FURTHER DRUG THERAPY AND PNEUMOPERITONEUM	(0)		(1)			
SUBSEQUENT THORACOPLASTY	(1)		(2)			
SUBSEQUENT THORACOPLASTY AND PNEUMOPERITONEUM	(0)		(1)			
SUBSEQUENT PNEUMOPERITONEUM	(0)		(1)			
LOBECTOMY PLUS WEDGE OR SEGMENT	2	4	0		2	2 0
PRIOR THORACOPLASTY	(1)					
CONCOMITANT THORACOPLASTY	(1)					
RESECTION TYPE NOT STATED	3	6	3	5 7	6	5 9
WITHOUT FURTHER THERAPY	(2)		(2)			
AFTER FURTHER DRUG THERAPY	(0)		(1)			
WITH PRIOR PLOMBAGE THORACOPLASTY	(1)		(0)			
THORACOPLASTY	8	16	8	15 0	16	15 5
ALEXANDER TYPE	(8)		(7)			
PLOMBAGE TYPE AFTER FURTHER DRUG THERAPY	(0)		(1)			
NO SURGERY	0		1	1 9	1	1 0
TOTAL	50	100	53	100 0	103	100 0

CASE NO. 8

29 YEAR-OLD NEGRO MALE.

ONSET OF DISEASE: MARCH 1949

TREATMENT

STREPTOMYCIN, 1 GM. TWICE WEEKLY 9-9-50 TO 12 14-51
PAS, 12 GM. DAILY

NO COLLAPSE THERAPY

RESISTANCE STUDIES

NONE AVAILABLE.

SPUTUM:

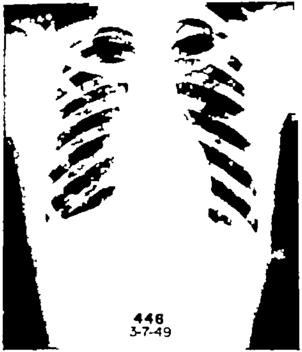
LAST POSITIVE FOR AFB IN MAY 1950

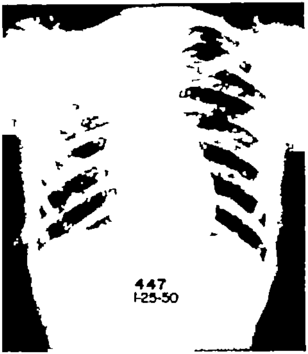
BRONCHOSCOPY:

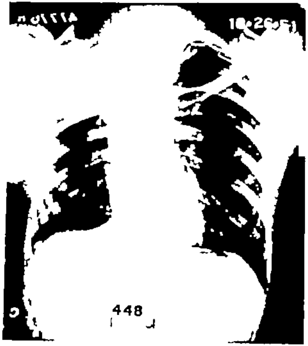
11 1 51 NEGATIVE.

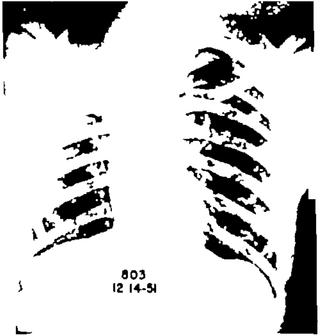
COURSE

PLANIGRAMS OF RIGHT APEX IN OCTOBER 1951 REVEALED NO EVIDENCE OF CAVITATION OTHER THAN THAT CONSIDERED TO BE BRONCHIECTATIC DILATATIONS.









CASE NO. 9

40 YEAR-OLD WHITE MALE.

ONSET O" DISEASE AUGUST 1943

TREATMENT

STREPTOMYCIN 1 GM DAILY PAS 12 GM DAILY	9 19 50 TO 1 16 51
PHRENIC NERVE CRUSH, RIGHT	9-4 44 AND 8 28-45
PNEUMOPERITONEUM	10 17 50 TO 1 16-51

RESISTANCE STUDIES

10 20 50 STREPTOMYCIN 3 0 MCG /ML.
PAS. 1 0 MCG /ML.

SPUTUM

LAST POSITIVE SPUTUM FOR AFB ON 10 20 50 BY CULTURE.

BRONCHOSCOPY

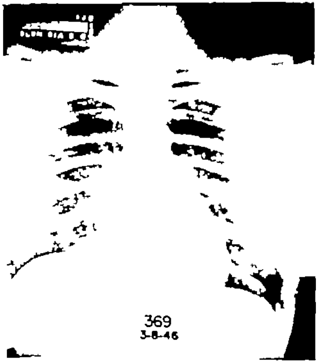
12 15-50: NEGATIVE.

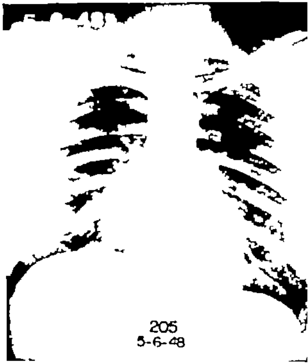
COURSE

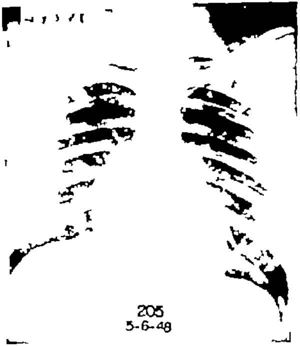
CHEST X RAY ON 5-6-48 EVEALED EVIDENCE OF CAVITATION IN NODULE IN RIGHT LOWER LO E.

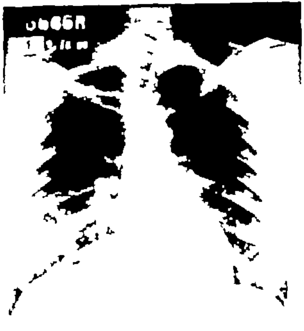
TREATMENT OF BRONCHIECTASIS ASSOCIATED WITH PULMONARY TUBERCULOSIS

TREATMENT	SURGEONS			INTERNISTS			TOTAL	
	NO		PER CENT	NO.		PER CENT	NO	PER CENT
LOBECTOMY	22		44	29		54 7	51	49 5
WITHOUT FURTHER THERAPY		(12)			(19)			
WITH CONCOMITANT THORACOPLASTY		(1)			(0)			
WITH SUBSEQUENT THORACOPLASTY		(0)			(2)			
WITH PRIOR THORACOPLASTY		(9)			(8)			
LOBECTOMY PLUS WEDGE OR SEGMENT	19		38	13		24 6	32	31 0
WITHOUT FURTHER THERAPY		(10)			(8)			
WITH PRIOR THORACOPLASTY		(1)			(1)			
WITH CONCOMITANT THORACOPLASTY		(6)			(0)			
WITH SUBSEQUENT THORACOPLASTY		(1)			(1)			
WITH PRIOR AND CONCOMITANT THORACOPLASTY		(1)			(2)			
WITH SUBSEQUENT PNEUMOPERITONEUM		(0)			(1)			
BILOBECTOMY	0			1		1 9	1	1 0
RESECTION TYPE NOT STATED	4		8	1		1 9	5	4 9
WITHOUT FURTHER THERAPY		(3)			(1)			
CONCOMITANT THORACOPLASTY		(1)			(0)			
THORACOPLASTY	2		4	3		5 6	5	4 9
ALEXANDER TYPE		(1)			(3)			
PLOMBAGE TYPE		(1)			(0)			
NO SURGERY	3		6	6		11 3	9	8 7
TOTAL	50		100	53		100 0	103	100 0









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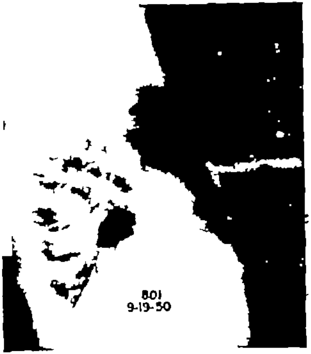


CASE NO. 9

TREATMENT OF LOWER LOBE CAVITY

TREATMENT	SURGEONS NO.	SURGEONS PER CENT	INTERNISTS NO	INTERNISTS PER CENT	TOTAL NO.	TOTAL PER CENT
SEGMENTAL RESECTION	11	22	15	28.3	26	25.2
WITHOUT FURTHER THERAPY	(11)		(14)			
WITH POSTOP PNEUMOPERITONEUM	(0)		(1)			
<u>LOBECTOMY</u>	33	66	26	49.1	59	57.3
WITHOUT FURTHER THERAPY	(31)		(22)			
AFTER FURTHER DRUG THERAPY	(1)		(4)			
WITH INSERTION OF PROSTHESIS	(1)		(0)			
RESECTION TYPE NOT STATED	6	12	9	17.0	15	14.6
NO SURGERY	0		3	5.6	3	2.9
TOTAL	50	100	53	100.0	103	100.0

CASE NO. 10

46-YEAR-OLD COLORED MALE.

ONSET OF DISEASE: IN 1943

TREATMENT

STREPTOMYCIN 1 GM. WEEKLY PAS, 12 GM. DAILY	JUNE 1949 TO SEPTEMBER 1949
STREPTOMYCIN, 1 GM. WEEKLY	APRIL 1951 TO AUGUST 1951
STREPTOMYCIN 1 GM. TWICE WEEKLY PAS, 12 GM. DAILY	4 11 52 TO 7 1 52
ISONIAZID, 300 MGM. DAILY ALDINAMIDE, 3 GM. DAILY	8-30 53 TO 1-25-54 DISCONTINUED BECAUSE OF JAUNDICE
VIOMYCIN 1 0 GM. TWICE WEEKLY TERRAMYCIN 2 0 GM. DAILY	4-30-54 TO 6-14-54 DISCONTINUED BECAUSE OF DERMATITIS, GENERALIZED.

RESISTANCE STUDIES:

6 16-54	STREPTOMYCIN	10 MCG. /ML.
	PAS,	100 MCG. /ML.
	ISONIAZID,	1 MCG. /ML.

SPUTUM

LAST POSITIVE FOR AFB ON 6 16-54 BY CULTURE.

BRONCHOSCOPY

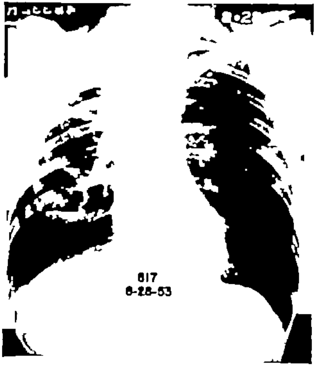
6-16-54: NEGATIVE.

COURSE

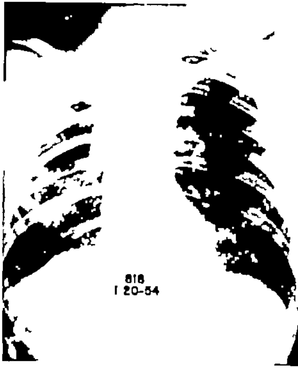
LARGE CAVITIES IN RIGHT LUNG FLUCTUATED IN SIZE FROM TIME TO TIME, THE MOST MARKED IMPROVEMENT BEING DURING TREATMENT WITH ISONIAZID AND ALDINAMIDE.

815
9-24-46

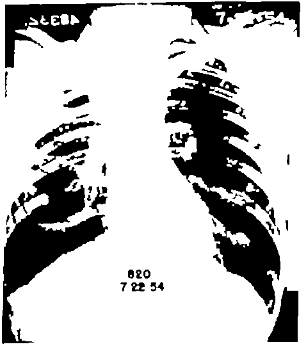
816
1-21-49



817
8-28-53



818
1 20-54



CASE NO. 10

TREATMENT OF BILOBAR CAVITATION WITH POSITIVE SPUTUM AND DRUG RESISTANCE

TREATMENT	SURGEONS NO.	SURGEONS PER CENT	INTERNISTS NO.	INTERNISTS PER CENT	TOTAL NO.	TOTAL PER CENT
SEGMENTAL RESECTION	0		3	5.7	3	2.9
WITHOUT FURTHER THERAPY			(2)			
AFTER NEEDLE ASPIRATION OF TENSION CAVITY			(1)			
LOBECTOMY PLUS WEDGE OR SEGMENT	7	14	0		7	6.8
WITHOUT FURTHER THERAPY	(3)					
WITH CONCOMITANT THORACOPLASTY	(1)					
WITH SUBSEQUENT THORACOPLASTY	(3)					
BILOBECTOMY	12	24	18	34.0	30	29.1
WITHOUT FURTHER THERAPY	(6)		(6)			
AFTER FURTHER DRUG THERAPY	(0)		(1)			
WITH PRIOR ALEXANDER THORACOPLASTY	(1)		(1)			
WITH PRIOR PLOMBAGE THORACOPLASTY	(1)		(0)			
WITH CONCOMITANT THORACOPLASTY	(4)		(4)			
AFTER FURTHER DRUG THERAPY	(0)		(1)			
WITH SUBSEQUENT THORACOPLASTY	(0)		(5)			
BILOBECTOMY PLUS SEGMENT	3	6	1	1.9	4	3.9
WITHOUT FURTHER THERAPY	(0)		(1)			
WITH PRIOR THORACOPLASTY	(1)		(0)			
WITH CONCOMITANT THORACOPLASTY	(2)		(0)			
PNEUMONECTOMY	22	44	25	47.1	47	45.6
WITHOUT FURTHER THERAPY	(11)		(14)			
AFTER FURTHER DRUG THERAPY	(0)		(4)			
AFTER FURTHER DRUG THERAPY AND PNEUMOPERITONEUM	(0)		(1)			
WITH PRIOR THORACOPLASTY	(1)		(1)			
WITH PRIOR AND CONCOMITANT THORACOPLASTY	(1)		(0)			
AFTER FURTHER DRUG THERAPY	(1)		(0)			
WITH CONCOMITANT THORACOPLASTY	(5)		(2)			
WITH SUBSEQUENT ALEXANDER THORACOPLASTY	(0)		(1)			
AFTER FURTHER DRUG THERAPY PLUS PHRENIC NERVE CRUSH	(0)		(1)			
WITH SUBSEQUENT PLOMBAGE THORACOPLASTY	(2)		(0)			
WITH INSERTION OF PROSTHESIS	(1)		(0)			
RESECTION, TYPE NOT STATED	3	6	3	5.7	5	4.9
CAVERNOSTOMY AND CONCOMITANT THORACOPLASTY	1	2	0		1	1.0
THORACOPLASTY ALEXANDER TYPE	2	4	1	1.9	3	2.9
NO SURGERY	0		3	5.7	3	2.9
TOTAL	50	100	53	100.0	103	100.0

CASE NO 11

P

33 YEAR OLD NEGRO MALE.

ONSET OF DISEASE: APRIL 1950

TREATMENT

STREPTOMYCIN 1 GM DAILY PAS, 12 GM. DAILY	5 18-50 TO 9 11 50
STREPTOMYCIN, 1 GM. TWICE WEEKLY PAS, 12 GM DAILY	7 2 52 TO 9-4 53
PNEUMOPERITONEUM.	3 18 53 TO 6-22 53

RESISTANCE STUDIES

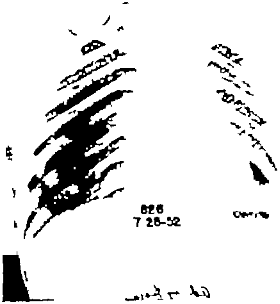
12 15-52 STREPTOMYCIN LESS THAN 10 MCG /ML.

SPUTUM

LAST POSITIVE FOR AFB ON 6-22 53 BY SMEAR OF CONCENTRATE.

BRONCHOSCOPY

6 17 53 EVIDENCE OF OLD ENDOBRONCHIAL DISEASE PRESENT IN RIGHT UPPER AND LEFT UPPER LOBE ORIFICES, APPEARING TO BE MORE ACTIVE ON RIGHT



CASE NO. 11

TREATMENT OF DESTROYED LUNG WITH POSITIVE SPUTUM

TREATMENT	SURGEONS NO.	SURGEONS PER CENT	INTERNISTS NO	INTERNISTS PER CENT	TOTAL NO.	TOTAL PER CENT
LOBECTOMY	2	4	0		2	1 9
PNEUMONECTOMY	41	82	38	71 7	79	76 7
WITHOUT FURTHER THERAPY	(19)		(12)			
AFTER FURTHER DRUG THERAPY	(3)		(10)			
PLUS PNEUMOPERITONEUM	(1)		(1)			
WITH PRIOR THORACOPLASTY	(5)		(5)			
AFTER FURTHER DRUG THERAPY	(1)		(0)			
WITH PRIOR AND CONCOMITANT THORACOPLASTY	(0)		(1)			
WITH PRIOR AND SUBSEQUENT THORACOPLASTY	(1)		(0)			
WITH CONCOMITANT THORACOPLASTY	(4)		(3)			
AFTER FURTHER DRUG THERAPY	(0)		(2)			
WITH SUBSEQUENT THORACOPLASTY	(5)		(3)			
AFTER FURTHER DRUG THERAPY	(0)		(1)			
WITH INSERTION OF PROSTHESIS	(2)		(0)			
RESECTION TYPE NOT STATED	2	4	3	5 7	5	4 9
WITHOUT FURTHER THERAPY	(1)		(2)			
AFTER FURTHER DRUG THERAPY	(1)		(1)			
THORACOPLASTY ALEXANDER TYPE	5	10	6	11 3	11	10 7
WITHOUT FURTHER THERAPY	(5)		(5)			
WITH CONCOMITANT PNEUMOPERITONEUM	(0)		(1)			
NO SURGERY	0		6	11 3	6	5 8
TOTAL	50	100	53	100 0	103	100 0

CASE NO. 12

33 YEAR-OLD NEGRO MALE.

ONSET OF DISEASE: APRIL 1952

TREATMENT

STREPTOMYCIN, 1 GM. TWICE WEEKLY PAS, 12 GM. DAILY	6 4 52 TO 9 12 53
STREPTOMYCIN 1 GM. TWICE WEEKLY PAS, 12 GM DAILY ISONIAZID 300 MGM. DAILY	9 13 53 TO 1 4 54
THORACENTESIS, REPEATED LEFT	JUNE 52 TO MAY 1953 WITH INJECTION OF STREPTOMYCIN AND PENICILLIN ON EACH OCCASION
PNEUMOPERITONEUM,	2 7 53 TO 6-16 53
CLOSED THORACOTOMY LEFT	7 12 53
OPEN THORACOTOMY LEFT	7-21 53

RESISTANCE STUDIES

12 5 53:	STREPTOMYCIN	100 MCG. /ML.
	PAS,	100 MCG. /ML.
	ISONIAZID	1 MCG. /ML.

SPUTUM

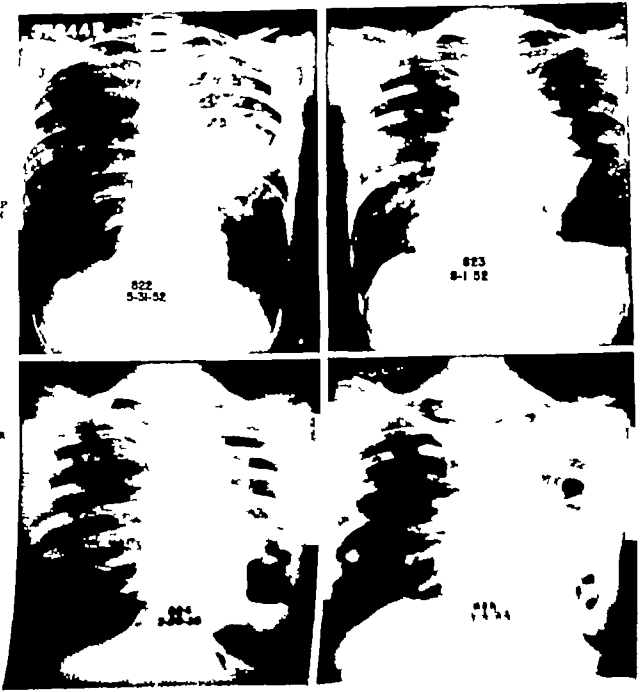
LAST POSITIVE ON 1-4 54 FOR AFB BY SMEAR.

BRONCHOSCOPY

6-22 53 ENDOBRONCHIAL DISEASE IN BASAL SEGMENTS OF LEFT LOWER LOBE.

COURSE

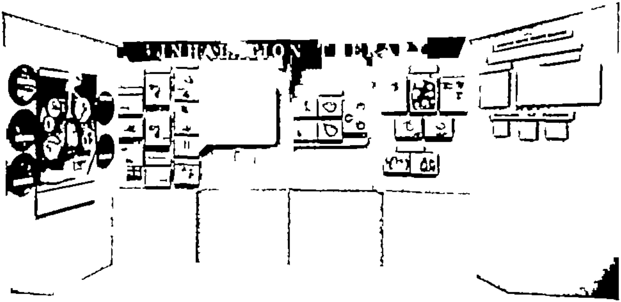
SPONTANEOUS PNEUMOTHORAX, LEFT BASE, DEVELOPED IN JULY 1952 DEFINITE BRONCHOPLEURAL FISTULA WAS DIAGNOSED ON 6-29 53 BY EXPECTORATION OF DYE FROM PLEURAL CAVITY TUBERCULOUS EMPYEMA IN LEFT BASE WAS CONFIRMED BY CULTURE.



CASE NO. 12

TREATMENT OF DESTROYED LUNG WITH BRONCHOPLEURAL FISTULA AND OPEN THORACOTOMY

TREATMENT	SURGEONS		INTERNISTS		TOTAL	
	NO	PER CENT	NO	PER CENT	NO	PER CENT
LOBECTOMY	1	2.0	2	3.8	3	2.9
WITHOUT FURTHER THERAPY	(1)		(0)			
WITH DECORTICATION OF LOWER LOBE	(0)		(1)			
AFTER FURTHER DRUG THERAPY	(0)		(1)			
PNEUMONECTOMY	41	82.0	42	79.2	83	80.6
WITHOUT FURTHER THERAPY	(15)		(18)			
AFTER FURTHER DRUG THERAPY	(0)		(2)			
WITH PRIOR THORACOPLASTY	(3)		(5)			
WITH PRIOR AND CONCOMITANT THORACOPLASTY	(3)		(1)			
WITH PRIOR AND SUBSEQUENT THORACOPLASTY	(1)		(0)			
WITH CONCOMITANT THORACOPLASTY	(9)		(10)			
WITH SUBSEQUENT THORACOPLASTY	(10)		(5)			
AFTER FURTHER DRUG THERAPY	(0)		(1)			
RESECTION TYPE NOT STATED	2	4.0	2	3.8	4	3.9
WITHOUT FURTHER THERAPY	(1)		(1)			
WITH CONCOMITANT THORACOPLASTY	(0)		(1)			
WITH CONCOMITANT THORACOPLASTY AND CLOSURE BRONCHOPLEURAL FISTULA	(1)		(0)			
THORACOPLASTY	5	10.0	4	7.5	9	8.7
ALEXANDER TYPE	(5)		(3)			
SCHEDE TYPE	(0)		(1)			
NO SURGERY	1	2.0	3	5.7	4	3.9
TOTAL	50	100.0	53	100.0	103	100.0



Inhalation Therapy

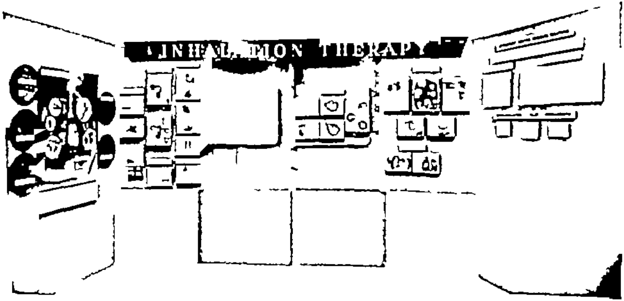
ALBERT H. ANDREWS JR., Chicago MAURICE S. SEGAL, Boston and PETER A. THEODOS, Philadelphia.

The exhibit illustrates the indications and uses of inhalation therapy as a means to restore adequate function to organs impaired by lack of oxygen and to aid in the correction of interference with bronchopulmonary mechanisms. The abnormal physiology and principles of therapy are illustrated for anoxia, pneumonia, heart disease, pulmonary edema, gas retention, emphysema and fibrosis, bronchial obstruction, and bronchial asthma. Oxygen, helium, water vapor pressure breathing, and bronchodilator aerosols are illustrated. The exhibit has been prepared by the committee on physiologic treatment of the Council on Research of the American College of Chest Physicians, with the cooperation of the respiration laboratory St. Luke's Hospital, Chicago.

CASE NO 12

TREATMENT O DESTROYED LUNG WITH BRONCHOPLEURAL ISTULA AND OPEN THORACOTOMY

TREATMENT	SURGEONS NO		SURGEONS PER CENT	INTERNISTS NO		INTERNISTS PER CENT	TOTAL NO	TOTAL PER CENT
LOBECTOMY	1		2 0	2		3 8	3	2 9
WITHOUT URTHER THERAPY		(1)			(0)			
WITH DECORTICATION OF LOWER LOBE		(0)			(1)			
AFTER FURTHER DRUG THERAPY		(0)			(1)			
PNEUMONECTOMY	41		82 0	42		79 2	83	80 6
WITHOUT URTHER THERAPY		(13)			(18)			
AFTER FURTHER DRUG THERAPY		(0)			(2)			
WITH PRIOR THORACOPLASTY		(3)			(5)			
WITH PRIOR AND CONCOMITANT THORACOPLASTY		(3)			(1)			
WITH PRIOR AND SUBSEQUENT THORACOPLASTY		(1)			(0)			
WITH CONCOMITANT THORACOPLASTY		(9)			(10)			
WITH SUBSEQUENT THORACOPLASTY		(10)			(5)			
AFTER FURTHER DRUG THERAPY		(0)			(1)			
RESECTION TYPE NOT STATED	2		4 0	2		3 8	4	3 9
WITHOUT FURTHER THERAPY		(1)			(1)			
WITH CONCOMITANT THORACOPLASTY		(0)			(1)			
WITH CONCOMITANT THORACOPLASTY AND CLOSURE BRONCHOPLEURAL ISTULA		(1)			(0)			
THORACOPLASTY	5		10 0	4		7 5	9	8 7
ALEXANDER TYPE		(5)			(3)			
SCHEDE TYPE		(0)			(1)			
NO SURGERY	1		2 0	3		5 7	4	3 9
TOTAL	50		100 0	53		100 0	103	100 0



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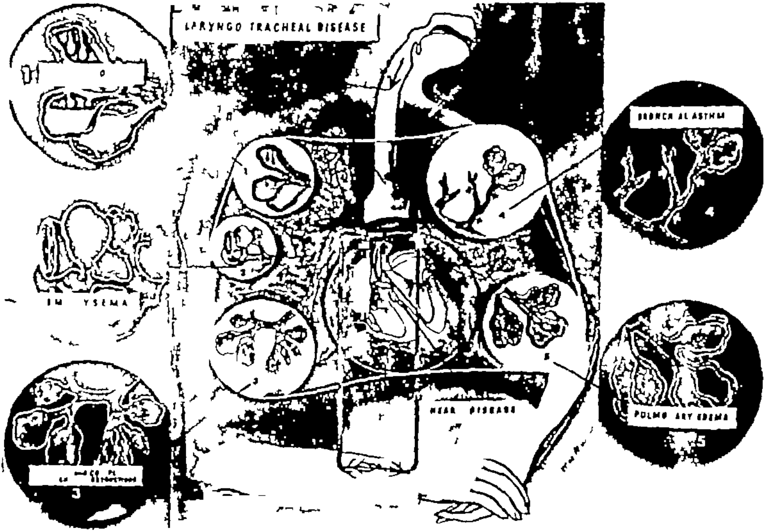
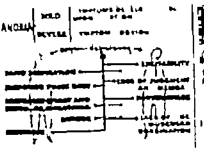
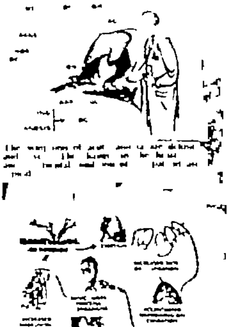
THE CONDITION

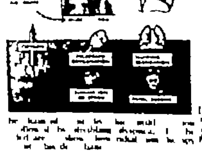


Diagrammatically shown is flow of oxygenated blood from capillary network surrounding alveoli through heart to body tissues where it gives up oxygen and picks up carbon dioxide returns to heart and back to alveoli for oxygenation

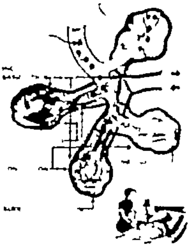
ANOXIA

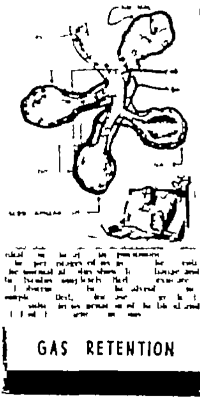




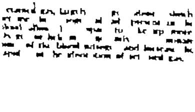


PNEUMONIA

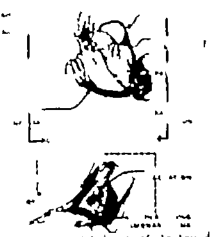


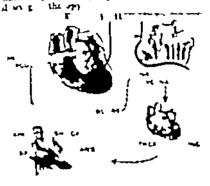


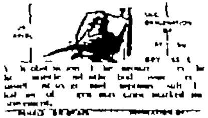
GAS RETENTION

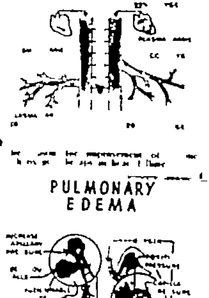


HEART DISEASE

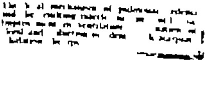








PULMONARY EDEMA



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Presented by

THE COMMITTEE ON

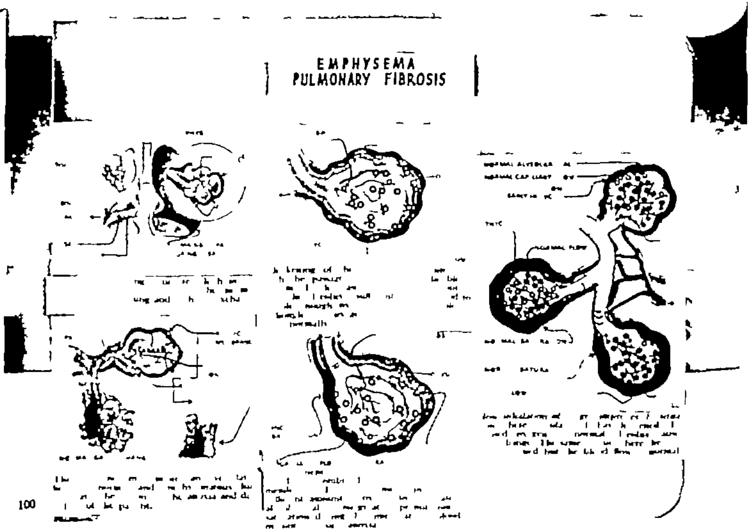
PHYSIOLOGIC THERAPY

American College of Chest Physicians

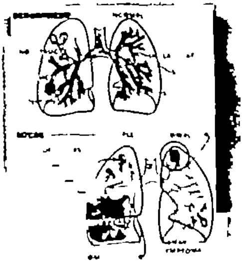
WITH THE COOPERATION OF

THE RESPIRATION LABORATORY

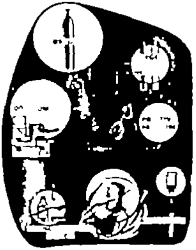
[illegible] CHICAGO



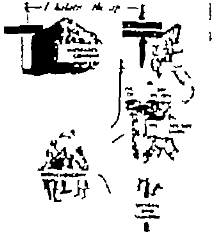
BRONCHIAL OBSTRUCTION



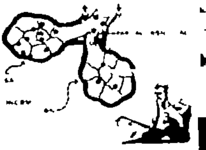
The ... generalized and local. The ... factors and the ... in the ... are shown ...



... treatment of ...



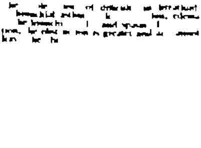
Treatment of the ... bronchi ... requires bronchoscopy ... to remove the obstruction and maintain adequate ventilation of the alveoli.



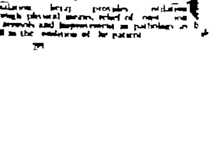
... the bronchial ... The ... and ... result ... of the patient.

... The great increase ... in the bronchi ... the obstruction and ... the alveolus. The ... considerable.

ASTHMA



... bronchial asthma ... edema ... the bronchi ... and spasm ... is greater and ...

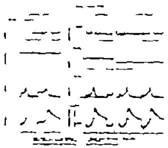


Inhalation therapy provides ... through physical means, relief of ... improvement in pathology as well as the ... of the patient.

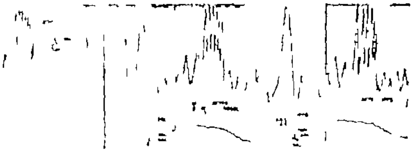
INTERMITENT POSITIVE PRESSURE BREATHING

PROVIDES POSITIVE PRESSURE ON INSPIRATION (WITH NORMAL EXPIRATION) AND ADMINISTRATION OF AEROSOLS DESIGNED TO AID BRONCHIAL DILATATION AND DRAINAGE AND TO IMPROVE PULMONARY VENTILATION IN PULMONARY EMPHYSEMA FIBROSIS AND ALLIED CONDITIONS

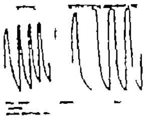
PRESSURE RELATIONSHIPS

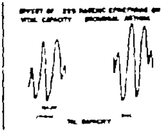


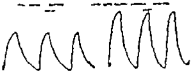
EFFECT ON VENTILATION



BRONCHODILATORS AND RELIEF OF BRONCHOSPASM







Congenital Anomalies of the Pulmonary Circulation: Diagnosis and Treatment.

Israel Steinberg and Nathaniel Finby, New York.

Conventional and angiocardiographic x-rays are used to illustrate the diagnosis and treatment of the following anomalies (1) absent main branch pulmonary artery including lung agenesis (2) patent ductus arteriosus with reversal of shunt (3) aberrant insertions pulmonary veins (4) anomalous systemic arteries to lung (5) pulmonary arteriovenous fistulas (6) primary dilatation (aneurysm) pulmonary artery (7) pulmonic stenosis (valvular and infundibular)

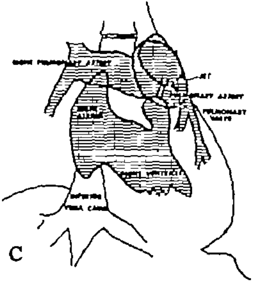
MALFORMATIONS OF THE PULMONARY ARTERY

Case 1. PRIMARY DILATATION (ANEURYSM) PULMONARY ARTERY

A. [illegible] roentgenogram [illegible] large mass [illegible] left hilum. Fluoroscopy demonstrated expansile pulsation [illegible] the mass.

B. Angiocardiogram [illegible] shows the left hilar mass to consist of [illegible] enlarged pulmonary artery and its left main branch. The right pulmonary artery is also enlarged.

C. Angiocardiogram, left oblique: aneurysmal dilatation of the artery and its branches.



Case II VALVULAR PULMONARY STENOSIS

A. Teleroentgenogram reveals enlargement of the heart and a prominent pulmonary artery segment.

B. Angiocardiogram reveals the valvular pulmonic stenosis. The pulmonary valvular jet is clearly defined. There is post stenotic dilatation of the pulmonary artery.

C. Tracing of B.

MALFORMATION OF A BRANCH OF THE PULMONARY ARTERY

Case III ABSENT RIGHT BRANCH PULMONARY ARTERY

A. Teleroentgenogram reveals overdistended left lung, mediastinal herniation of the left lung, and deviation of the heart and heart to the right. Note poor vascularity of right lung and compressed right hemithorax.

B. Angiocardiogram reveals absence of the right branch of the pulmonary artery. Serial angiocardiography showed that right lung was supplied by bronchial arteries.

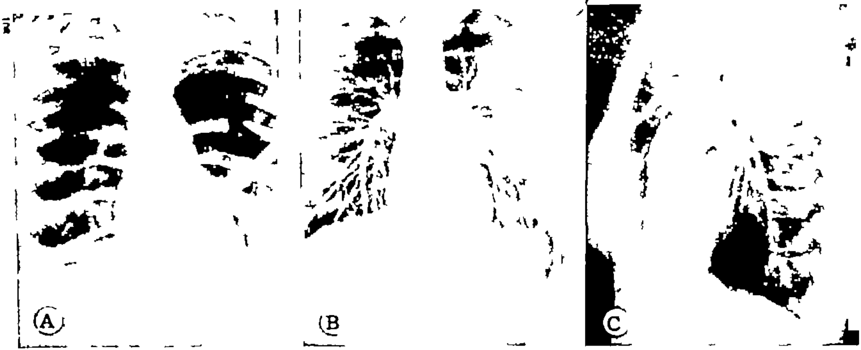
Case IV ABSENT LEFT PULMONARY ARTERY

A. Teleroentgenogram reveals ma ked overdistention of the right lung with tracheal deviation t the left nd mediastinal herniation of the ight lung. The left l ng is small nd has little ascula ty

B. Bronchogram demonst tes normal left bronchus. The left lung appears hypoplastic but other ise normal.

C. Angiocardiogram frontal iew demonstrates bsenc of the left pulmonary tery

D. Angiocardiogram, left anterior oblique view lso dem onst tes absence of the left pulmonary artery



Case VIII ARTERIOVENOUS FISTULA, LEFT LOWER LOBE

A. T leoroentgenogram reveal small area of increased density (arrow) in the left pper l ng field.

B. Angiocardiogram frontal iew dem onstrates opacification of the arteriovenou fistula.

C. A giocardiogram left lateral iew demonstrates the arteriovenous fist la in the anterior segment of the left upper lobe.

Case IX. ARTERIOVENOUS FISTULA, RIGHT LUNG

A. Teleoroentgenogram reveals small lobulated density l the lateral portion of the right mid-lu g field. Lateral view localized the ensity in the superior segment of the right lower lobe.

B. A giocardiogram clearly demonstrates the arteriovenous fistula with its arterial and enous comm nications.

C. Enlarged photograph of woods met l cast of the resected specimen (cou tesy of D John McClenahan)

A

ALTERATION OF PULMONARY CIRCULATION

Case X. PATENT DUCTUS ARTERIOSUS

A T ko... lgr...g m demonstrates enlargement of the heart particularly on the right, nd enlargement of the pulmonary artery segment. Note the engorged pulmonary rtery branches and plethora of parenchymal sculature.

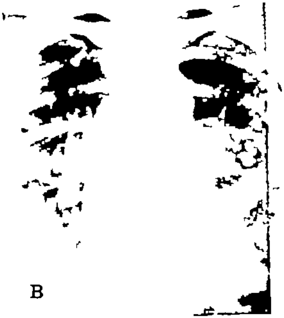
B. Postoperati teleoroentgenogram demonstrates the hea t t he smaller l sure Ther is ma ked diminution of pulmonary asculature, ith a retur to normal appearance.

Case XI. PATENT DUCTUS ARTERIOSUS WITH REVERSAL OF BLOOD FLOW

A T leoroentgenogram demonstr tes the slightly enlarged heart nd the prominent pulmonary artery segment.

B Angiocardiogram demonstrates enlargement of the right heart and pulmonary rtery The ductus is localized and opacified blood fills the descending aorta.

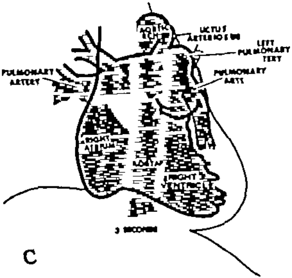
C. Tracing of B.



B

A

B



C

Case VIII ARTERIOVENOUS FISTULA LEFT LOWER LOBE

A. Teleoroentgenogram reveals small area of increased density (arrow) in the left upper lung field.

B. Angiocardiogram frontal view demonstrates opacification of the arteriovenous fistula.

C. Angiocardiogram left lateral view demonstrates the arteriovenous fistula in the anterior segment of the left upper lobe.

Case IX. ARTERIOVENOUS FISTULA RIGHT LUNG

A. Teleoroentgenogram reveals a small lobulated density in the lateral portion of the right mid-lung field. Lateral view localized the density in the superior segment of the right lower lobe.

B. Angiocardiogram clearly demonstrates the arteriovenous fistula with its arterial and venous communications.

C. Enlarged photograph of woods metal cast of the resected specimen (courtesy of Dr John McClenahan)

A

ALTERATION OF PULMONARY CIRCULATION

Case X. PATENT DUCTUS ARTERIOSUS

A. Teleoroentgenogram demonstrates enlargement of the heart particularly on the right and enlargement of the pulmonary artery segment. Note the engorged pulmonary artery branches and plethora of parenchymal vasculature.

B. Postoperative teleoroentgenogram demonstrates the heart to be smaller in size. There is marked diminution of pulmonary vasculature with return to normal appearance.

Case XI. PATENT DUCTUS ARTERIOSUS WITH REVERSAL OF BLOOD FLOW

A. Teleoroentgenogram demonstrates the slightly enlarged heart and the prominent pulmonary artery segment.

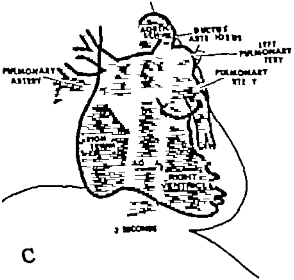
B. Angiocardiogram demonstrates enlargement of the right heart and pulmonary artery. The ductus is visualized and opacified blood fills the descending aorta.

C. Tracing of B.

B

A

B



C

Case XII. ANOMALOUS RIGHT PULMONARY VEIN INSERTING INTO INFERIOR VENA CAVA

A. Teleoroentgenogram demonstrates the large crescent-shaped shadow [in] the right lung field. Vascular branching of this structure and prominence of the right border of the heart [are] noted.

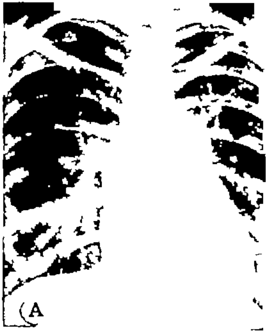
B. Angiocardiogram at 6 seconds shows the anomalous right pulmonary vein draining into the inferior vena cava. Further opacification demonstrated enlarged right atrium due to the anomalous blood flow.

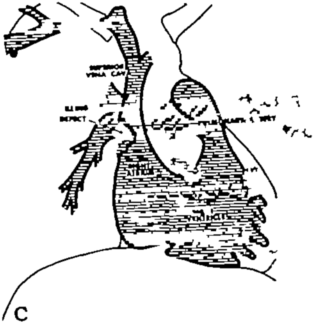
Case XIII. ANOMALOUS INSERTION OF PULMONARY VEINS

A. Teleoroentgenogram shows enlarged heart and pulmonary artery. The lungs fields are plethoric. Note pulmonary [vein at] right cardiac border.

B. Angiocardiogram at 2 ½ seconds reveals filling defect (jet) at junction of superior vena cava and right atrium.

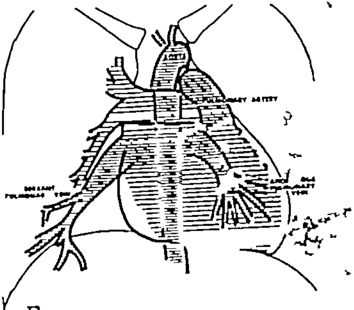
C. Tracing of B.





D. Angiocardiogram ... shows ... of the ... pulmonary veins.

E. Tracing of D.



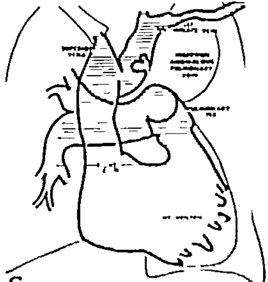
E

Case XIV. ANOMALOUS INSERTION OF PULMONARY VEINS INTO LEFT INNOMINATE VEIN

A. ... enlarged heart ... shadows ... pulmonary veins into the left innominate vein ...

B. Angiocardiogram ... left innominate ... anomalous pulmonary veins.

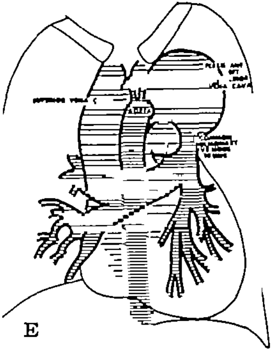
C. Tracing of B.



C

D. Angiocardiogram at 8 sec. which demonstrates common pulmonary venous trunk draining into persistent left superior vena cava.

E. Tracing of D.

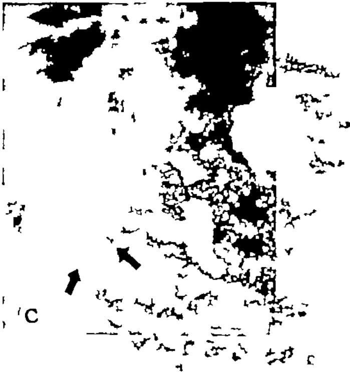


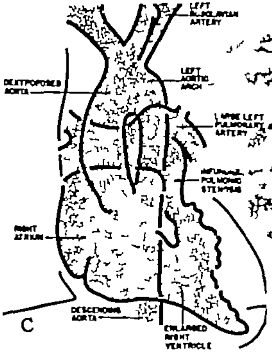
Case XV. ANOMALOUS ARTERIES FROM ABDOMINAL AORTA TO LUNG

A. The roentgenogram reveals increased density obscuring right lower lung field. Heart is displaced to right. Right hemithorax appears small.

B. Angiocardiogram at sec. shows markedly rotated heart with small right pulmonary artery and branches.

C. Angiocardiogram at 5 seconds shows opacification of left heart and aorta. Arrows point to aberrant arteries from descending aorta piercing the right diaphragm and entering right lung.





C RDIC VA CULAR ANOM LIES

ATION OF

lemon- he pul seconds the pul branches, dext opose, ld ng and tal defect.

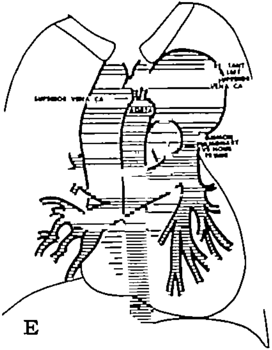
C. Tracing of

Case XVII EISENMENGER'S COMPLEX

A. Front l iew hows the he t nd pu lmonary tery segment t he m kedly enlarged. S l sis of the spine is evident.
B. nd C. Angiocardiograms t nd 3 seconds demonst te the ight hea t enla gement. Cent l nd periphe l pulmonar teries re ma kedly enlarged. The a opa fies sim lt neously th the *pulmonary* circulation indic th of erridi g nd high i terven t icula septal defect.

D. Angiocardiogram at 8 seconds demonstrates common pulmonary venous trunk draining into persistent left superior vena cava.

E. Tracing of D.



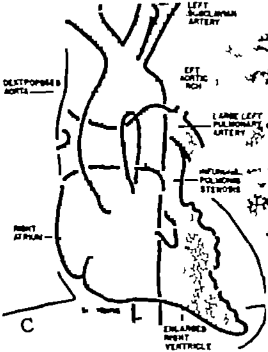
Case XV. ANOMALOUS ARTERIES FROM ABDOMINAL AORTA TO LUNG

A. Teleroentgenogram reveals increased density obscuring right lower lung field. Heart is displaced to right. Right hemithorax appears small.

B. Angiocardiogram at 1 seconds shows markedly rotated heart with small right pulmonary artery and branches.

C. Angiocardiogram at 3 seconds shows opacification of left heart and aorta. Arrows point to aberrant arteries from descending aorta piercing the right diaphragm and entering right lung.

B



C

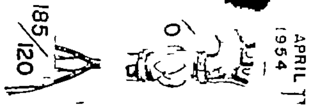
C RDIOVASCULAR ANOMALIES

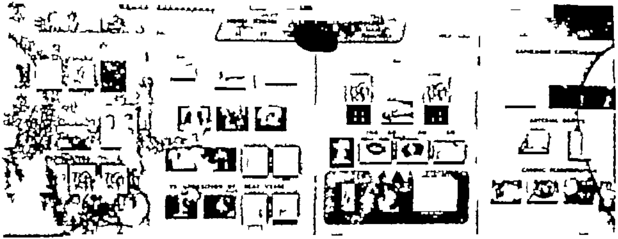
... demon ... the ... tal defect.

C. Tracing of ...

Case XVII EISENMENGER'S COMPLEX

A. Frontal view shows the ... pulmonary artery segment to be ... enlarged ... the ...





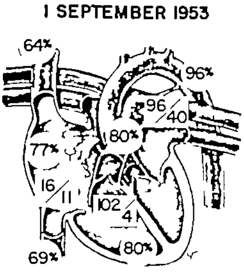
Cardiovascular Conference.

WELDON J WALKER, CURTIS P ARTZ, ROBERT E. BLOUNT JOHN P FAIRCHILD and THOMAS H. HEWLETT Brooke Army Medical Center Fort Sam Houston Texas, and JOHN J KRALIK, Cleveland.

A pictorial clinic with colored transparencies demonstrates the medical, surgical, radiological, pediatric, pathological and surgical research contributions to the diagnosis and therapy of patients with heart disease. Representative cases with pre and postoperative clinical and hemodynamic data are graphically presented of such diverse lesions as atrial septal defect, coarctation of aorta, aortic insufficiency mitral stenosis, aortic aneurysm, patent ductus arteriosus, pulmonary stenosis, and transposition of the great vessels.

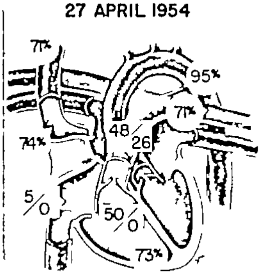
ATRIAL SEPTAL DEFECT

C theter [illegible] right p lmona y [illegible] Not the marked dilatations of the pulm [illegible] a tery



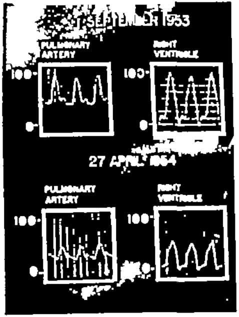
SHUNT LEFT TO RIGHT
2 9 L/MIN

I cop [illegible] het [illegible] la



NO SHUNT

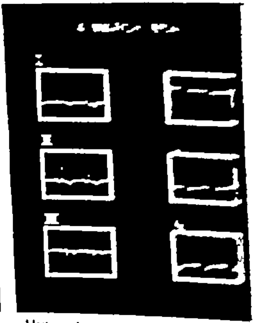
Post oper [illegible] catheterization dat



Not the reduct [illegible] [illegible] essures [illegible] low [illegible] [illegible] of the [illegible] trial sept [illegible] defect.

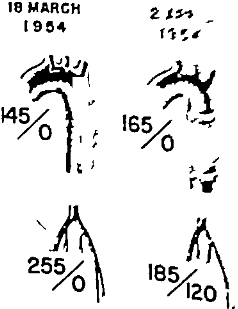
AORTIC INSUFFICIENCY

Not he cardia enla gement h Involvement of the left vent icle



Elect ... hyper tro

H fnagel I I plac on the ac ta

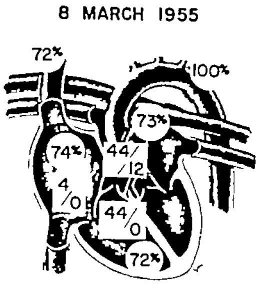


Pre and Post operati blood ...

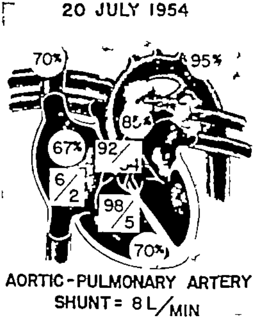
PATENT DUCTUS

I reoper t hest y—patent ductus ter ows ith pulmona y hyper en n Not he huge pulmonary tery nd inc ased asc la markings.

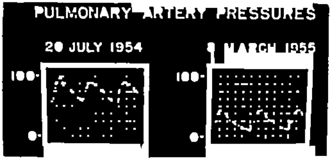
Postoperat hest y following li sion of I ge duc us. Conside ble educt in the size of the hea t I pulmona y tery is ev den P tient has considerable pulmonary em physema resulting f om 1 lelong ec nt ona y infections. H dness in he lef due t etained lipiodol from pres hogram.



Preoperative catheterization data.



Postoperatii catheterization data.

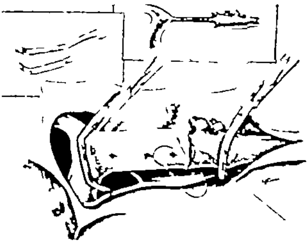


Not the reduction of pulmonary tery p essu f llow ng division of the large patent du tus iriosus.

[C OARCTATION
(Cas 4

	7 JUNE 1954	30 JUNE 1954
Upper extremities	260/115	148/80
Lower extremities	155/130	164/90

Pre- nd post-operati data



Insertion of homogr ph following exci n of long segment of narrowed aorta.

Resected coa cted segment of aorta.

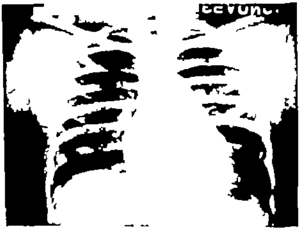
Note the characteristic rib notching seen in coarctation of the aorta.

Angiocardiogram reveals narrowing of aortic lumen with post stenotic dilatation.

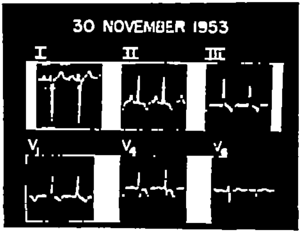
Patients beyond the ge of 50 who ha had successf l sections for coarctation of the aorta.

PULMONARY STENOSIS

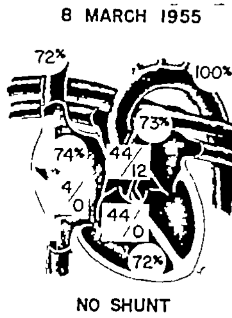
Case 5



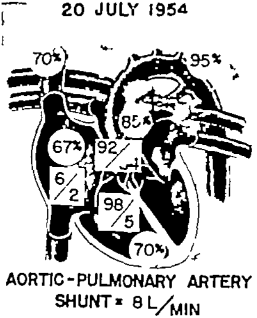
Chest ray of patient with valvula pulmonary stenosis. Note the marked post-stenotic dilatation of the pulmonary rtery with normal to decreased vascular markings.



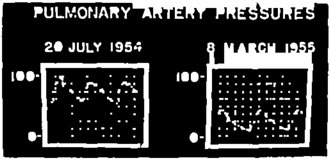
Marked right entricular hypertrophy in patient with v lvula pulmonary stenosis.



Preoperath catheterization data.



Postoperath catheterization data.



Not the reduction of pulmona y rtery ; est follow ng division of the large patent du tus teriosu

COARCTATION
(Ca 4

	7 JUNE 1954	30 JUNE 1954
Upper extremities	260/115	148/80
Lower extremities	155/130	164/90

Pre- nd post operath data.

Insertion of homograph followi g excision of long segment of narrowed aorta.

Resected coa cted segmen of aorta

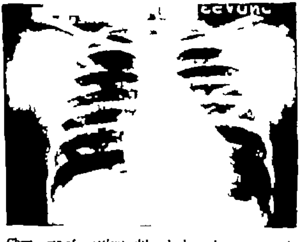
Not the characteristic rib notching seen in coarctation of the aorta.

Angiocardiogram reveals narrowing of aortic lumen with post-stenotic dilatation.

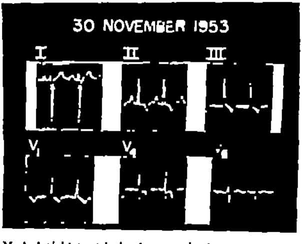
Patients beyond the age of 30 who have had successful operations for coarctation of the aorta.

PULMONARY STENOSIS

Case 5

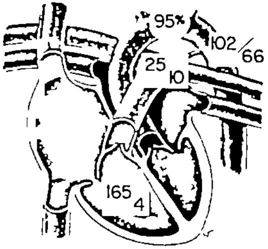


Chest ray of patient with valvular pulmonary stenosis. Note the marked post stenotic dilatation of the pulmonary artery with normal to decreased vascular markings.



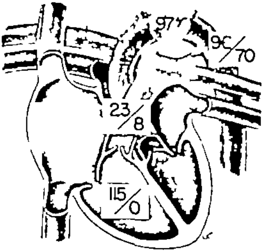
Marked right ventricular hypertrophy in patient with valvular pulmonary stenosis.

I DECEMBER 1953



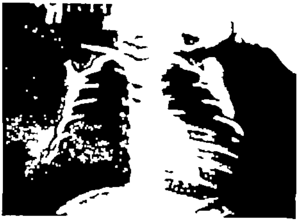
Preoperative catheterization data

20 MAY 1954



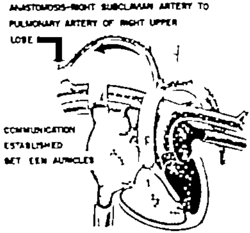
Postoperative catheterization data.

TRANSPOSITION OF GREAT VESSELS (Cont.)

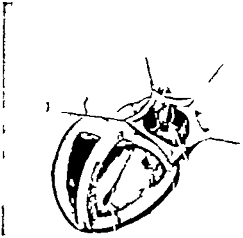


X-ray of chest [illegible] patient with transposition of great vessels.

Angiocardiogram of [illegible] patient with transposition of the great vessels. Note the [illegible] visualization of the aorta without visualization of the pulmonary artery.



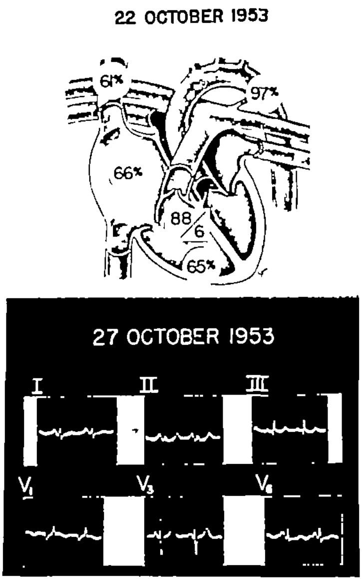
OPERATION FOR TRANSPOSITION OF GREAT VESSELS



Autopsy findings of [illegible] patient who died seven months after operation for transposition of the great vessels. [illegible] thrombus [illegible] the left [illegible] which produced fatal pulmonary embolism. The surgically created [illegible] septal defect is evident as is the congenital defect [illegible] the mitral valve. The low location of the interventricular septal defect is unusual.

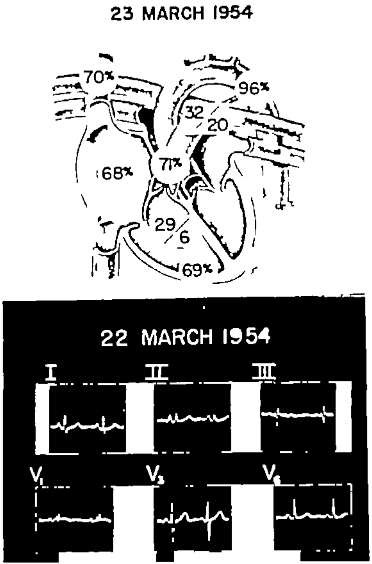
MITRAL STENOSIS

Case 7



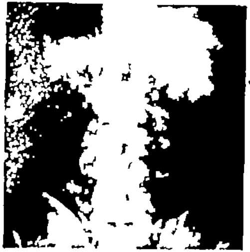
Preoperative data.

Surgeon's finger tipped with umbilical tape to aid in more effective separation of the mitral commissures.

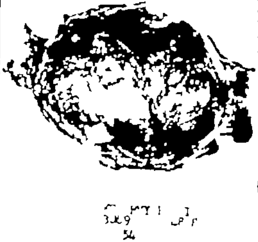


Postoperative data. Note the marked reduction in right ventricular pressure and the regression of the electrocardiographic evidence of right ventricular hypertrophy.

ABDOMINAL AORTIC ANEURYSM
Case B



X ray of the abdomen showing calci fication of the wall of a large abdomi nal aortic aneurysm.



Aneurysm resected at surgery

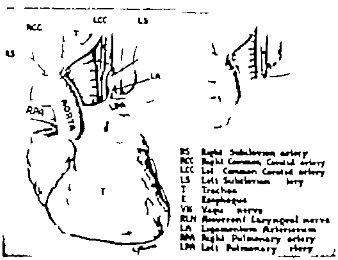
Same aneurysm following section.

Same case aortic hemograph plat

X ray of barium filled esophagus — right anterior oblique view. Note anterior displacement of the esophagus and narrowing of the tracheal shadow

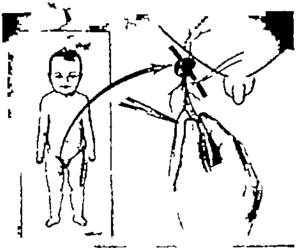
A angiogram reveals opacification of the left ventricle the right sided aortic arch and its major arterial branches.

VASCULAR RING



Artist drawing of the vascular ring. Constriction of the trachea and esophagus was relieved by severing the left subclavian artery and the ligamentum arteriosum which connected the left subclavian and the left pulmonary arteries.

SAPHENOUS CATHETERIZATION



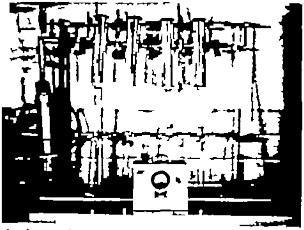
(rdiac atheterization la the saphenous ein often affords asier entry I anomalous pulmonary eins nd atrial septal defects.

(theter in the right pulmonary tery

(theter hrough atrial sept l defect I to left pulmona y ein.

C theter I nomalous pulmonary ein which empties int the ight i ium.

ARTERIAL GRAFTS



Equipment for preserving arterial grafts by the freeze drying method.

Lyophilized huma thoracic

ABDOMINAL AORTIC ANEURYSM

Case 8

X ray of the bdomen showing calci fication of the wall of a large abdomi nal aortic aneurysm.

Aneu ysm resected t surgery

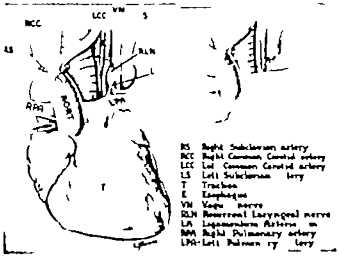
Same neu ysm following section.

Same case aortic hemogr pl plac

X) of ba ium filled esophagus — ight a terior obliq iew Not terior d placement of the esophagus nd na rowing of the tracheal shadow

Angic d g m eveals opac fic ion of the left ent le he gh suled aortic h nd its major art ial b anches.

VASCULAR RING



Art st d a ing of the ascula ing Constriction of the t achea and esophagus w lieved by severing the lef subcla ia rt ry and the lig ment m teriosum which onnected the left subcla ia nd the left pulmonary arteries

Intramural Electrocardiography

MYRON PRINZMETAL, ALFRED GOLDMAN, RASHID MASSUMI, LOIS SCHWARTZ, REXFORD KENNAMER, LOUIS RAKITA, and JEAN LOUIS BORDUAS, Cedars of Lebanon Hospital, Los Angeles, and City of Hope Hospital, Duarte, Calif.

The exhibit is concerned with the genesis of the electrocardiographic deflection in man and dog with relation to spread of excitation from endocardium to epicardium as determined by intramural potentials. It demonstrates the manner in which various components of the electrocardiogram develop and points out the contribution made to the genesis of the electrocardiogram by various myocardial layers. These fundamental observations explain the clinical electrocardiogram especially in coronary artery disease in a more rational light than previously possible.

DEPOLARIZATION OF THE NORMAL VENTRICLE

The classic theory of normal ventricular depolarization is illustrated diagrammatically. Depolarization is supposed to proceed at steady constant rate from endocardium to epicardium. Under such circumstances, pure QS waves would occur in leads from the ventricular cavity, an R wave would occur in epicardial leads from the ventricular surface. RS waves would occur in all intramural leads between the cavity and surface. The large question mark indicates that this theory was formulated before the development of intramural electrocardiography.

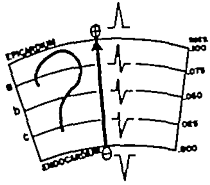


Fig. 1

According to classic theory then, the R wave would be derived from and represent depolarization of the entire myocardial wall.

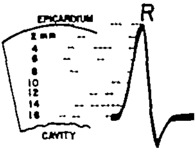
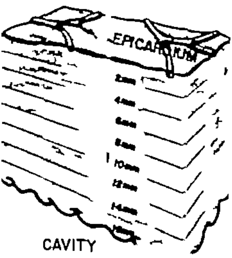


Fig. 2

Figure 3 shows diagrammatically how the tiny intramural electrode may be inserted into the myocardium and record at any desired depth. The electrode is insulated except at its tip.



Department of Medicine, School of Medicine, University of California, Los Angeles

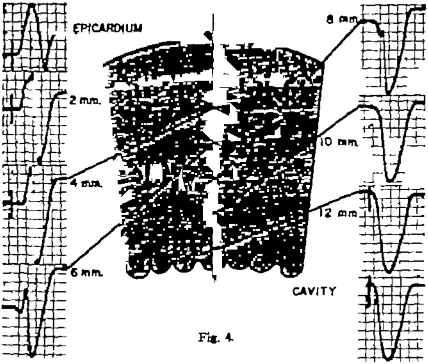


Fig. 4.

Exploration of the dog's left ventricle. Note that R waves are seen in complexes only from outer portion of wall. The inner layers record only QS waves.

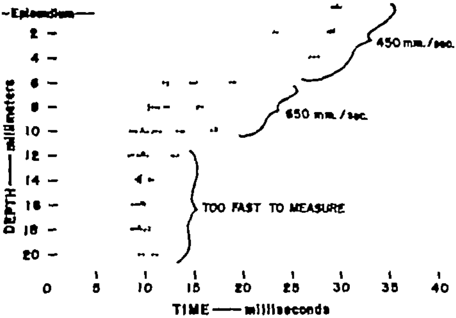


Fig. 5

Speed of impulse as measured by the onset of the intrinsic deflection at various levels in left ventricle of dog. Transmission is extremely rapid in inner layers. Rate of impulse transmission gradually decreases in outer layers.

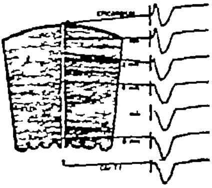
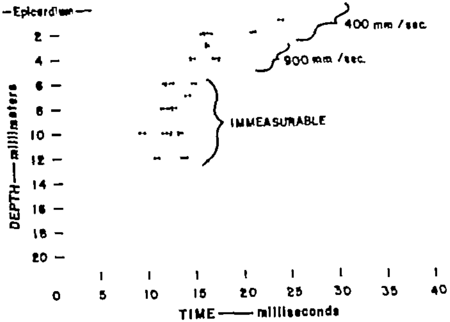


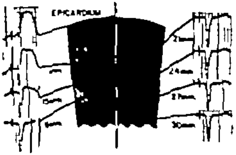
Fig. 6

Exploration of right ventricle of dog myocardium. As in left ventricle, QS wave similar to that of cavity persists until outer zone where R wave is recorded.



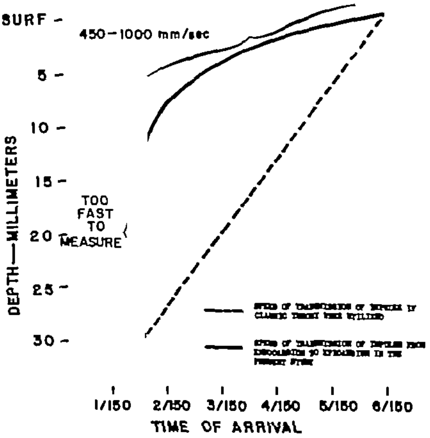
Similar to left ventricle, speed of impulse transmission in dog's right ventricle is very rapid in inner layers and proceeds at gradually decreasing rate in the outer layers.

Fig. 7



Exploration of the normal human myocardium. As in the experimental animal, QS waves are recorded from the inner layers and the R waves appear only in the outer layers.

Fig. 8



If the impulse were transmitted at a constant rate from endocardium to epicardium as classic theory states, it would be represented by the broken line. Instead, actual measurements in the human ventricle show that the impulse is transmitted at a gradually decreasing rate in the outer layers and is extremely rapid in the inner layers.

Fig. 9

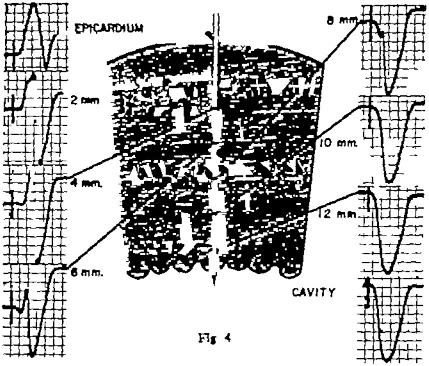


Fig. 4

Exploration of the dog's left ventricle. Note that R waves are seen in complexes only from outer portion of wall. The inner layers record only QS waves.

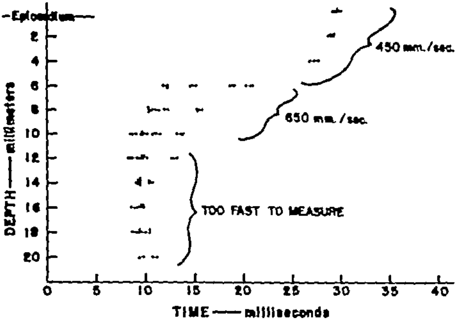


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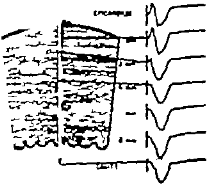
Fig. 5



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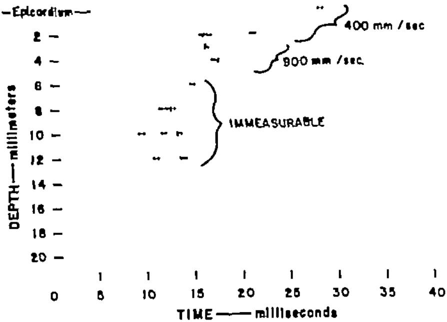

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Fig. 7

Exploration of the normal human myocardium. As in the experimental animal, QS waves are recorded from the inner layers and the R waves appear only in the outer layers.

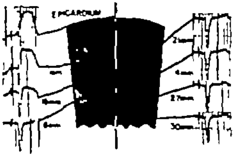

Fig. 8

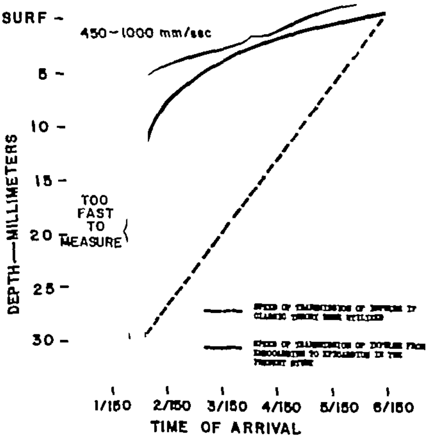

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Fig. 9

The typical complexes recorded from various levels of the normal ventricle in both man and dog are represented diagrammatically. In accordance with classic theory, QS waves occur in cavity leads, R waves occur in epicardial leads, and RS waves occur in intramural leads from the outer layers. Intramural leads from the inner layers of the ventricle exhibit pure QS waves similar to the cavity complexes. They do not represent initial R waves. This indicates that depolarization of the inner ventricular layers is electrocardiographically silent; that is, for practical purposes it does not contribute to the clinical electrocardiogram.

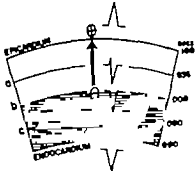


Fig. 10

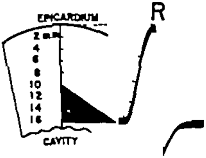


Fig. 11

Thus, the R wave is derived from the outer myocardial layers rather than the entire wall.

Theoretically a reasonable explanation for the silence of the inner ventricular layer is that Purkinje fibers and branches may extend deeply into the subendocardium. Subendocardial depolarization might then occur so rapidly and in so many directions that no positive potential would be recorded.

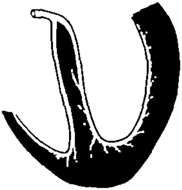


Fig. 12

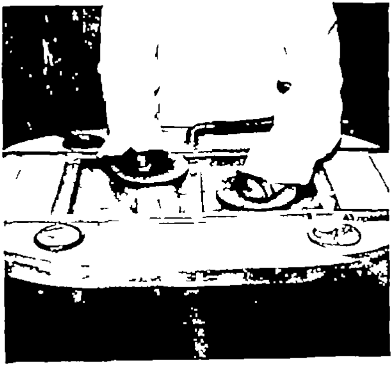


Fig. 13

NORMAL T WAVE

Owing to extreme instability of T waves in open-chested animals, our experiments were carried out in an incubator providing constant temperature and humidity.

As diagrammed here, direct epicardial leads in the open chested dog register inverted T waves in room atmosphere but upright T waves in the incubator the latter T waves being similar to those in the precordial record when the chest is closed.

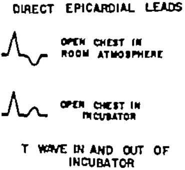


Fig. 14

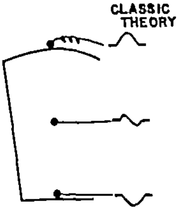


Fig. 15

Preliminary data suggest some discrepancies between classic theories and our findings. Theoretically upright T waves should occur over the ventricle biphasic T waves should occur in the midwall, and inverted T waves should be present in endocardial leads if repolarization proceeds from epicardium to endocardium.

The T waves recorded from the intramural layers of the human myocardium were identical in direction and amplitude in most cases.

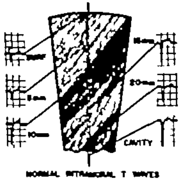
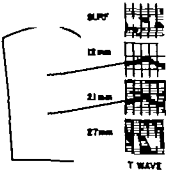


Fig. 16



Experimentally the subepicardial and subendocardial T waves are often identical in direction and different in timing, the former usually being a few hundredths of second later than the latter as illustrated here.

The T waves recorded in clinical electrocardiography appear to reflect directly the epicardial T waves. The body surface T waves, therefore, are probably governed by the repolarization of the superficial myocardial layers *and are probably not influenced* appreciably by repolarization of the subendocardium, just as the QRS of the clinical electrocardiogram is reflection largely of the state of the epicardial layers.

Fig. 17

SUBENDOCARDIAL INFARCT

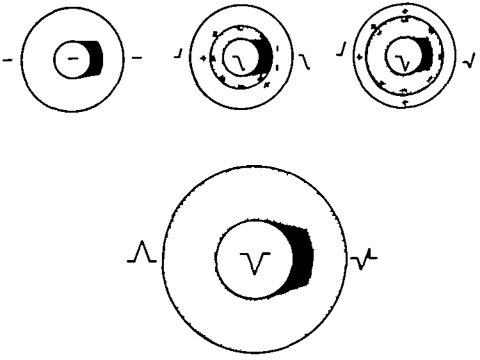


Fig. 18

SUBENDOCARDIAL INFARCTION

According to classic theory subendocardial infarcts yield coronary QR waves. Transmission of the negative cavity potential through the subendocardial infarct presumably causes an initial Q wave. Depolarization of the intact outer layers over the subendocardial infarct then generates positive potential, causing an R wave after the Q

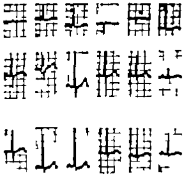


Fig 19

The precordial electrocardiogram ecorded over ventricle with a subendocardial infarct is reproduced here. These tracings are typical of those from seven dogs with chronic pure subendocardial infarcts produced by coronary artery ligation. Note that the tracings are entirely normal.

The first row is standard limb leads 1, 2, 3, V and aVL. Second row represent precordial leads, V1 through V6. The third row tracings taken one interspace lower V1 through V6.

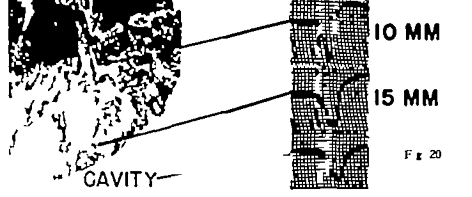
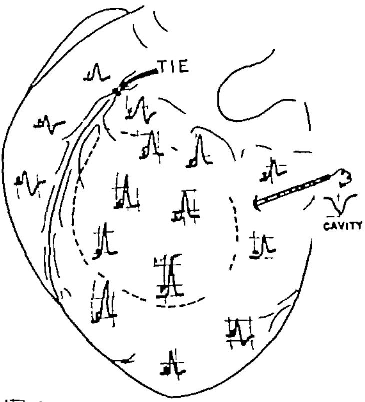


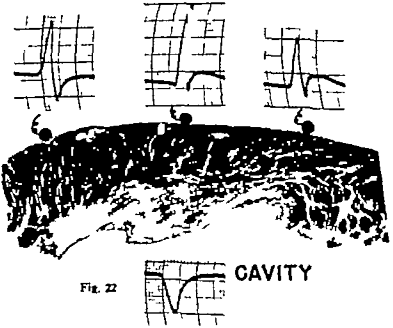
Fig 20

Cross section of dog myocardium with experimentally produced pure subendocardial infarction. Epicardial lead registered over the infarct is normal. The fibrous region appears white (*Mallory connective tissue stain.*)



Diagrammatic representation of complexes from epicardial leads over entire surface of heart in a dog with pure subendocardial infarction, the extent of which is indicated by dotted line. All complexes are normal.

Fig. 21



Normal tracings from epicardial leads over pure subendocardial infarction in dog. Fibrotic tissue is white.

Fig. 22

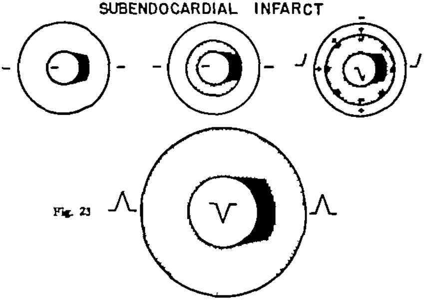


Fig. 23

Thus, pure subendocardial infarcts do not yield coronary QR waves. This is explained with reference to the observation that deeper layers of the normal ventricle are electrocardiographically silent. Depolarization of normal subendocardial muscle does not contribute to the electrocardiogram. Pure subendocardial infarcts therefore cannot alter the normal depolarization complex. Clinically, patients with endocardial elastofibrosis may have fatal outcome without ever registering an abnormal Q wave electrocardiographically.

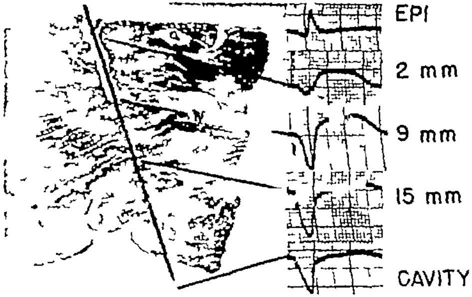


Fig. 24

Although coronary QR waves did not occur over pure subendocardial infarcts, they were nevertheless recorded from many animals after coronary artery ligation. In every instance, a mixture of live and diseased muscle was present in the outer ventricular layers. In Figure 24 patchy fibrosis is present in the light gray areas. The subendocardial muscle over which QR waves were recorded varied from completely normal to completely dead. Thus, coronary QR waves occur when the outer ventricular layers contain both live and diseased muscle. These deflections are independent of the status of the subendocardium.

Direct observations in human myocardial infarction support these experimental findings. In 5 patients with healed myocardial infarction and intractable angina pectoris undergoing surgery for improvement of coronary circulation, coronary QR complexes were recorded only from areas visibly involved by patchy infarction.

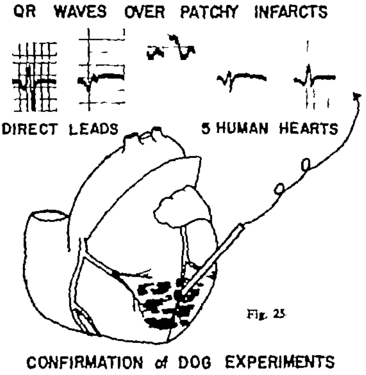


Fig. 25

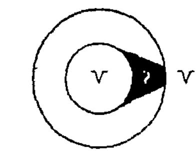


Fig. 26

CORONARY QS WAVES

Classic theory concerning the genesis of coronary QS waves presumes that the negative cavity potential is transmitted unaltered through "hole" of dead tissue to the epicardium. Coronary QS waves thus would signify that the underlying muscle, from endocardium to epicardium, is completely dead.

Cross section of dog myocardium in the region of a through-and-through infarct. The wall i entirely devoid of li e muscle Epicardial, intramural, and cavity leads from thi and other such lesions yielded identical QS wa es, confirming that the negative cavity potential was transmitted unaltered through the "hole of dead tissue. The complexes recorded over through-and-through infarcts thus may be termed cavity type coronary QS w es. Neither surface nor intramural ST segment levation can be elicited from myocardium with this kind of lesion.

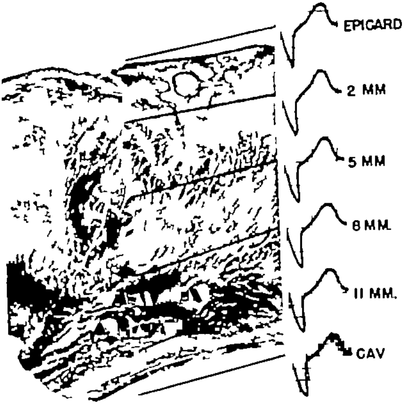


Fig. 27

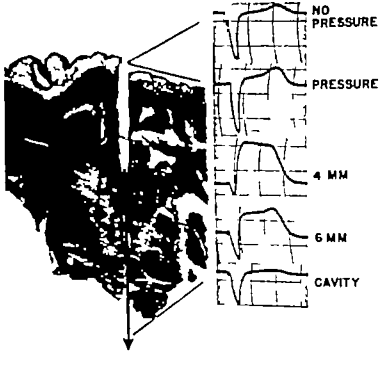
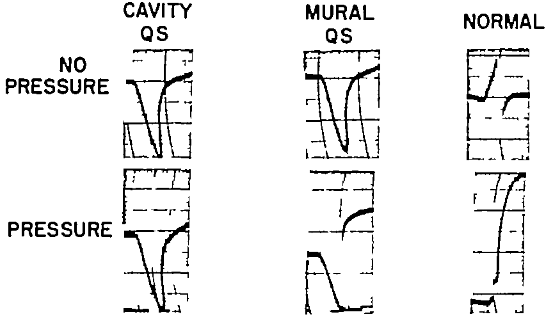
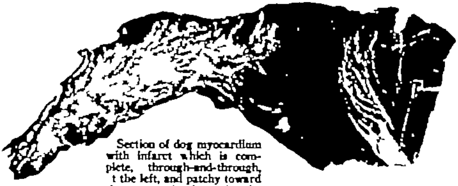


Fig. 28

A second type of infarct lso yielded coronary QS w ves. Here ligation of the coronary artery produced a patchy infarct with significant amounts of l ve muscle scattered throughout the involved region. The darker staining areas represent living tissue. As in through-and-through infarction, the negative potential presumably was transmitted f om the ca ity through the i farct. Thi negative potential, however was modified by potentials resulting from depolarization of live muscle in the ventricular all thus, surface pressure caused an injury effect in the surface and intramural leads. The QS es recorded over patchy infarct may be called "mural-type coronary QS waves. They occurred as frequently as cavity type QS w ves over chronic infarcts in experimental animals.





Section of dog myocardium with infarct which is complete, through-and-through, at the left, and patchy toward the center. At the right, the myocardium is normal. The effect of pressure upon the surface leads at these three points is shown. The cavity type QS wave remains unchanged; injury effect can not be elicited over through-and-through infarcts. Potential from the remaining live muscle in the patchy portion of the infarct resulted in an injury effect due to pressure, as did those from the normal myocardium.

Fig. 29

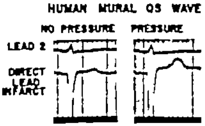
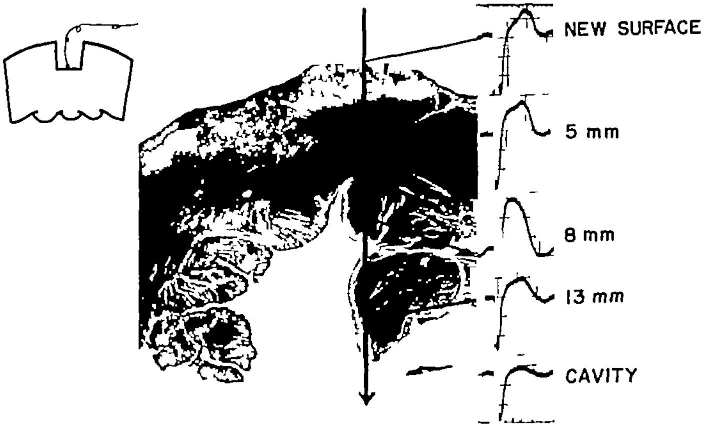


Fig. 30

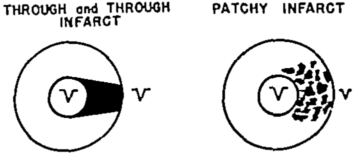
Human mural QS waves over the surface of an infarct obtained by direct leads during thoracotomy for cardiac surgery. Surface pressure caused injury effect indicating the presence of viable tissue in a region yielding QS waves. This is similar to the mural QS wave over patchy infarction in the dog shown in Figure 29.

Thus QS waves in man do not always indicate complete through-and-through myocardial death.



Section of dog myocardium in which a portion of the epicardial layer has been excised similar to the diagrammed inset. Note that, despite the fact that the underlying layers are intact and were able to function, a QS wave was obtained directly over the region devoid of epicardial layers.

Fig. 31



Contrary to classic theory therefore, the cardiac muscle which yields coronary QS wa es may not be complet ly dead and hence may retain its ability t function effectively

Fig. 32

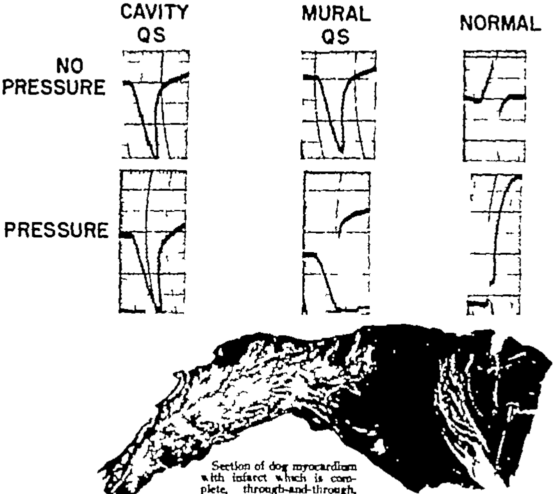


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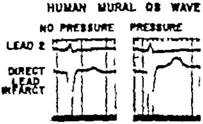
Fig. 29



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Thus QS waves in man do not always indicate complete through-and-through myocardial death.

Fig. 36

Thus, chronic subendocardial infarct involving large portion of the entricular myocardium may yield normal tracings if they are confined t the " lectrocardiographically ilent zone. Contrariwise, les extensi damage to the outer entricular layers may cause markedly abnormal complexes although the inner layers remain r latively intact.

E en the presence of pure QS w es cannot be regarded as unequivocal evidenc that the underlying muscle is completely dead. These deflections may occur over portions of the heart containing enough live muscle t contract effectively well over through-and-through infarcts. This was clearly observed in high-speed motion pictures of infarcted ventricles recorded simultaneously with direct epicardial leads. The motion pictures revealed that through-and-through inf rcts alw) ballooned out d during ventricular systole indicating that they were noncontractile. I contrast, several patchy infarcts over which coronary QS w ves wer recorded howed active systolic contractions. By means f a Vanguard Analyser it w possible to measure and illustrat diagrammatically the myocardial contraction associated with given direct lectrocardiographic complex.

The normal ventricular complex and the contraction curve are illustrated here.

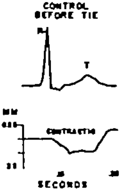


Fig 37

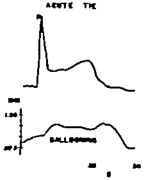


Fig. 38

After an acute coronary ligation in the dog heart illustrated in Figure 37 the involved region of the myocardium ballooned despite the persistence of an R wave in the direct lead from that region.

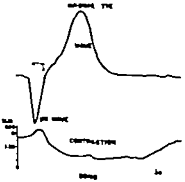


Fig. 39

Contrariwise, in several dogs, patchy infarcts over which coronary QS waves were recorded showed acti systolic contractions such as this. Since this myocardium could contract, these must be rmural-type" QS waves similar to those in man illustrated in Figure 35. Thus an R wave may be recorded from noncontractile myocardium, and myocardium which contracts effectively may register QS waves.

From practical viewpoint, these observations on myocardial infarction explain many discrepancies between classic lectrocardiographic theory and actual lectrocardiographic findings. They serve to emphasize that the physician cannot rely upon the electrocardiographic findings alone in the diagnosis and prognosis of myocardial disease.

MYOCARDIAL INFARCTION IN THE PRESENCE OF LEFT BUNDLE BRANCH BLOCK

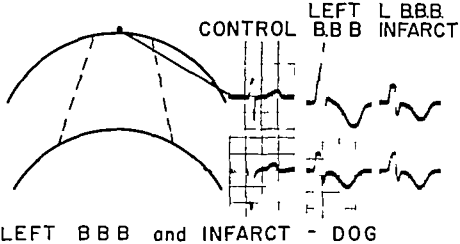


Fig. 40

It is classically stated that the initial positivity of the left ventricular cavity in left bundle branch block precludes the appearance of infarction Q waves when the left ventricle is infarcted, making the diagnosis of infarction by QRS changes in the presence of left bundle branch block impossible. As illustrated here, the cavity in dogs with left bundle branch block did show an initial positivity which was much smaller than the R ecorded from the overlying surface. This was due to the positive potentials generated by the depolarization of the free left ventricular wall accounting for the greater amplitude in the left ventricular epicardial leads. When transmural infarction was superimposed on left bundle branch block, the left ventricular surface R wave was reduced in height, becoming approximately equal to the R wave of the left ventricular cavity as illustrated here. Therefore, in the presence of left bundle branch block, a decrease in R amplitude in leads from the left ventricular surface indicates superimposed infarction of the left ventricle.

In a few patients with left bundle branch block who developed myocardial infarction, the R waves recorded from the left lateral chest decreased in amplitude. The electrocardiogram f om one of these is hown oppos te. Compare leads V and V befor and after infarct This finding appear to have the same diagnostic significance in human being as t has experimentally

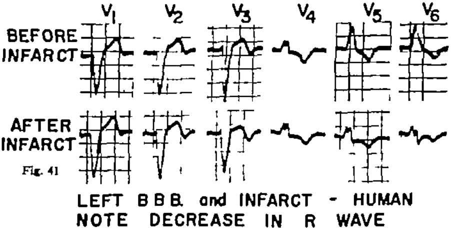


Fig. 41

ABDOMINAL AND LUMBAR LEADS IN DIAPHRAGMATIC INFARCTION

There is considerable uncertainty in the interpretation of the Q waves in Leads III and Vr Deep wide Q waves in these leads may be caused by lectrical positional changes of the heart while the absence of abnormal Q waves in these leads does not rule out infarction. Multiple-lead full body exploration in patients w th well-documented myocardial infarctions showed that, in some cases, some f the abdominal and lumba lead contained diagnostic Q es while Leads III and aVr showed normal complexes. Abdominal and lumbar leads may be superior to aVr and III for the diagnosis of diaphragmatic infarctions because (1) abdominal and lumbar leads closer t the diaphragmatic surface than are III and V , and (2) abdominal and lumba leads can be taken from many pos tion The variety of angles that these leads subtend with the diaphragmatic surface of the heart offer greater chance of uncovering QRS changes of the diaphragmatic infarcts, particularly when the infarcts re small. The left flank or lumbar lead seem most promi ing

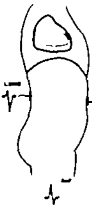
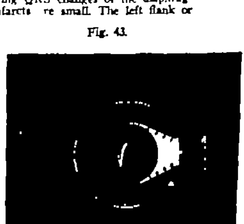


Fig. 42

AB... LUMBAR ... IN DIAPHRAGMATIC ...

Fig. 43.



ST SEGMENT DEVIATION

The ST segment changes observed in pat ent with coronary artery disease re generally ttributed t a d pole at a boundary between injured and uninjured muscle. ST segment elevation presumably occur f the electrode faces the injured ide of the boundary ST segment depression is supposed to occur whe the lectrode faces the uninjured side of the boundary Lead recorded over transmural injuries and over the oppos t wall thus hould present levated ST segments, while lead recorded adjacent to a transmural injury and over subendocardial injuries hould present depressed ST segments.

The actual distribution of injury potentials immediately after coronary artery ligation is shown here. As indicated by the plus signs, elevated ST segments occur throughout the injured region. The amount of elevation diminishes from epicardium to endocardium and from the center to the border of injury. This gradient of positivity exists even though the inner ventricular layers suffer at least as much anoxia as the outer layers. N such gradient would occur according to the theory illustrated in Figure 43. Also, contrary to classic theory, ST segment depression usually does not occur adjacent to the injury and ST *segment elevation does not occur over the opposite wall.* I stead, leads recorded outside the boundary of injury are usually entirely normal.

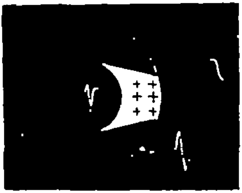


Fig. 44

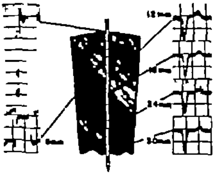


Fig. 45

Surface and intramural tracings from human heart during cardiac surgery. The pplication of slight pressure with the surface electrode caused *marked injury potentials at the surface* and in the outer myocardial layers, but slight or none in the inner layers.

In the dog heart, just as in the human heart, injury potentials in response to surface pressure were marked in the epicardial layers and minimal to absent in the inner layers.

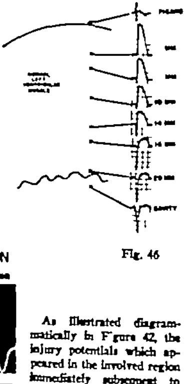
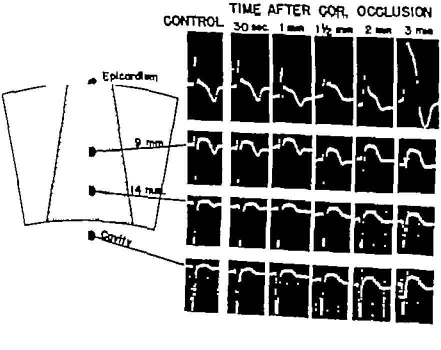
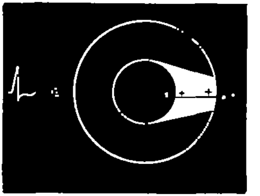


Fig. 46



As illustrated diagrammatically in F gure 42, the injury potentials which appeared in the involved region immediately subsequent to coronary artery ligation in the dog were most marked at the surface and in the epi cardial layers and the amount of elevation diminished from epicardium to endocardium, despite the fact that the inner layers were probably more extensively involved.

Fig. 47



Direct leads taken over the wall opposite an infarcted region usually showed slight t moderate ST depression. The ST depression recorded opposite an injury i of the reciprocal type which can be related to a vector Since positivity within the ventricle diminishes as the distance from the injured epicardium increases, the wall opposite the injury is relatively negative and therefore yields depressed ST segments.

Fig. 48

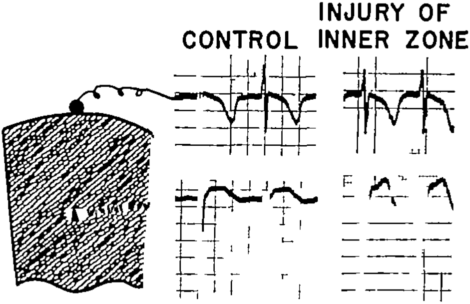


Fig 49

Normal muscle over subendocardial injuries failed to yield depressed ST segments. The pres ence of subendocardial injury was established by ST segment levation in subendoca dial leads Instead of reciprocal depression isoelectric ST segment occurred in surface leads over the subendocardial injury

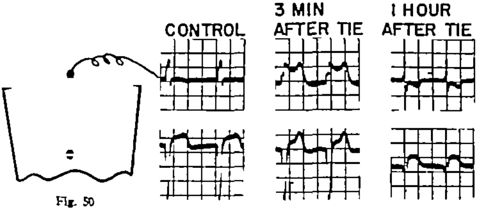


Fig. 50

I contra t to reciprocal ST segment depres ion, type of ST segment depression was observed which is tentati ely termed primary epica dial ST depres ion This type of depression w obtained in xperimental animal nder variety of circumstances and lso in human beings It w detected only from the epicardial surface and ppears t be due t certain functional or biochemical changes taking place in the outer layer of the myoca dium. This ST depres io may be lated frequently t myocardial ischemia but may also appear in response t phy ical hanges, such the pplication of moderat heat t the myocardial surface See urface complex under 40 C in Figure 55. It is not associated with ST lev ti n in other rea f the heart nd not lated t the tat of ST segment in the underlying subendocardial myoca d um Not that it ppeared opposit fter the injury effect had ubsided and that lead from the under lying subendocardium did not chang correspondingly

In animals, this type of ST depression ppears to be a localized phenomenon and has been observed in acute coronary ligation subacute myocardial infarcts, and old myocardial infarct usually at the margin of the infarct. It also occurred a result of hemodynamic alteration due to bleeding or prolonged manipulation of the heart in the laboratory in open-chested dogs. Heating the surface of the heart often produced ST depression.

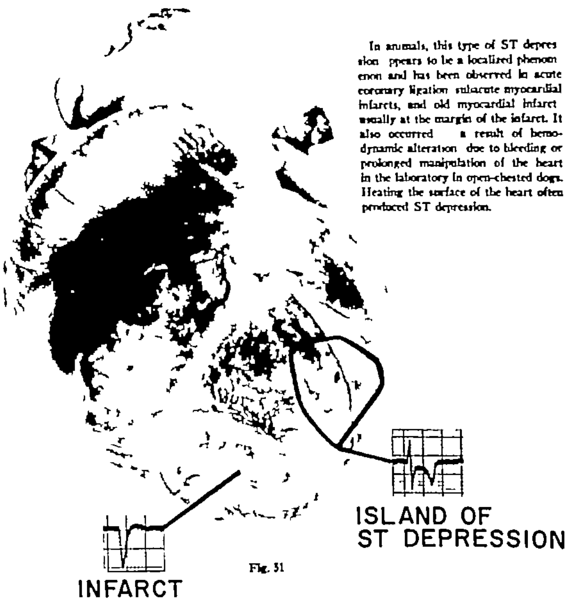
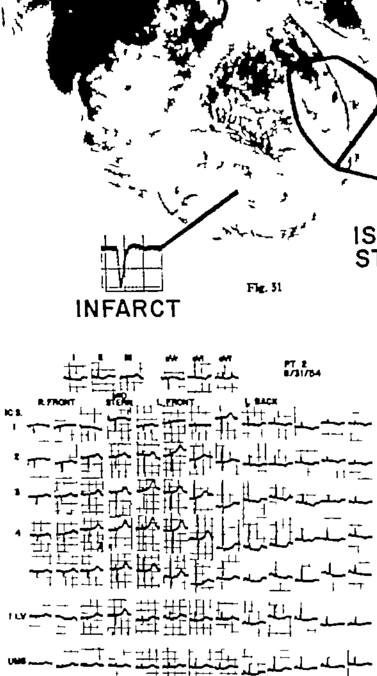


Fig. 51



I patients, this type of ST segment depression ha been observed in association with myocardial infarction a day or tw before the ppearance of ST segment elevatio w th typical QRS changes in subacute infarcts after regression of the ST segment levation, and in old infarcts long after the disappearance of the acute ST segment levation. The isolated area of ST segment depression out lined here in case which was explored thoroughly ppeared in association with coronary-type chest pain. Tw days later the ST depression was replaced by QRS changes indicative of acute infarction.

Fig. 52

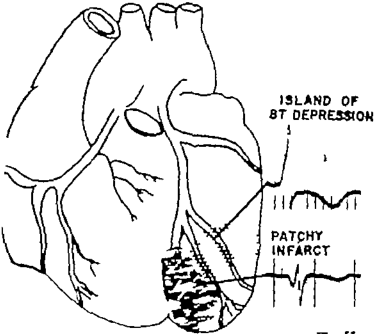


Fig. 53

DIRECT EPICARDIAL LEADS
HUMAN HEART DURING SURGERY

In three patients with old infarcts in whom the electrocardiogram showed ST segment depression, direct epicardial leads obtained during thoracotomy for surgical improvement of the coronary circulation recorded islands of epicardial ST depression on the anterior aspect of the apex as diagrammed. The areas of epicardial ST depression were found to lie directly under the areas of ST depression on the chest and were believed to be related. This type of ST segment depression, which usually occurs in islands adjacent to infarcts, appears to be a common finding in association with clinical myocardial infarction in all stages. Approximately one-third of all patients with myocardial infarction exhibit this type of ST depression either before, during, or after infarction. One may conclude that both experimental and clinical ST segment deviation appear to be a function of injury potentials generated in the outer myocardial layers and are not influenced appreciably by subendocardial changes.

T WAVE CHANGES

It was observed that the electrical forces responsible for the T wave in normal man appear to be generated in the outer myocardial layers (Figs. 15-17) The human intramural T waves wer usually identical in direction and amplitude, and a reciprocal relationship between the subepicardial and subendocardial T waves was only occasionally observed. T waves from two human cases subjected to cardiac surgery are shown here. In *A* and *B* the T waves are similarly upright in the cavity and midmurally but differ in amplitude at the surface.

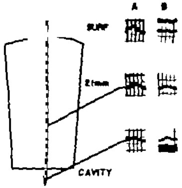
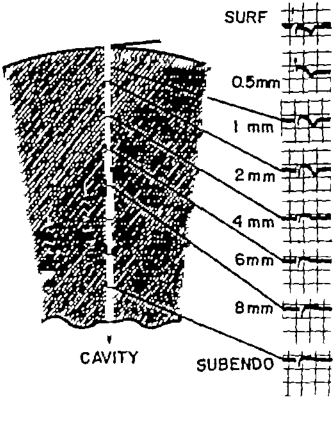


Fig. 54



INTRAMURAL T WAVES
At the Margin of an Old Infarct

Fig. 55

In a region presumed to be ischemic throughout at the margin of an old infarct in a dog the intramural T waves apparently had no reciprocal relationship, just as in most of the human hearts. Here, ischemic type T wave inversion in the outer layers is not reflected by similar or reciprocal T wave changes in the endocardial layers.

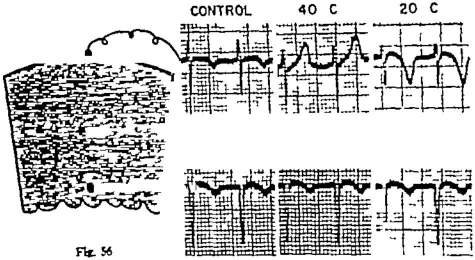


Fig. 56

The epicardial and subendocardial T waves showed remarkable independence both in direction and time of occurrence. Here alterations in duration and direction of the epicardial T waves in the dog's heart due to application of minute amounts of heat or cold to the surface had little or no influence on the subendocardial T wave.

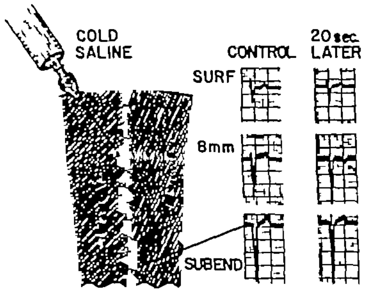


Fig. 57

MIDMURAL INJECTION - COLD SALINE

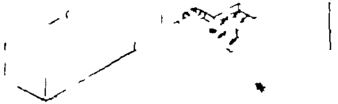
Similarly injection of a minute quantity of cold saline midmurally inverted the T wave recorded at that region but did not affect the surface or subendocardial T waves.

CHANGES IN CARDIAC FORCE HAVE BEEN MEASURED WITH AN ELECTROMECHANICAL PICK-UP UNIT SMALL ENOUGH TO BE USED ON INTACT ANIMALS THIS DEVICE WHEN SUTURED TO THE HEART WALL PERMITS RECORDINGS OF THE FORCE OF MYOCARDIAL CONTRACTION ACTING AGAINST THE TWO ENDS OF THE UNIT THESE RECORDINGS REFLECT WITH SENSITIVITY AND CONSISTENCY THE CHANGES PRODUCED BY THE DRUGS AND BY VARIOUS PHYSIOLOGICAL MANEUVERS

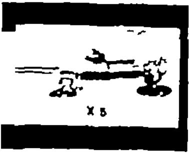
RESULTS OBTAINED IN THIS WAY ARE CONSIDERED TO BE CAPABLE OF PRACTICAL APPLICATION IN CLINICAL SITUATION SINCE:

1 NO SIGNIFICANT DIFFERENCES HAVE BEEN DEMONSTRATED BETWEEN THE DRUG RESPONSES OF THE CANINE HEART AND THE HUMAN HEART

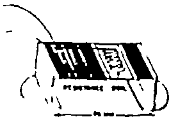
2 SOME OF THE MORE CHARACTERISTIC FINDINGS FROM THESE ANIMAL EXPERIMENTS HAVE BEEN SUPPORTED BY CLINICAL OBSERVATIONS INCLUDING PARTICULARLY THE USE OF ACCELERATION BALLISTOCARDIOGRAMS AS AN INDICATOR OF CHANGES IN THE FORCE OF THE HUMAN HEART



THE PICK UP UNIT BASED ON THE PRINCIPLE OF THE RESISTANCE WIRE STRAIN GAGE RELIABLY MEASURES CHANGES IN FORCE OVER THE APPROXIMATE RANGE OF 5 TO 200 GRAMS WHEN STITCHED TO THE VENTRICULAR MUSCLE IN DOGS THE USUAL MEASUREMENTS FROM THE RIGHT VENTRICLE ARE IN THE RANGE OF 40 GRAMS; DRUGS SUCH AS EPINEPHRINE AND DIGITALIS PROMPTLY ELEVATE THE RANGE OF THE RECORDINGS TO 80 OR 100 GRAMS

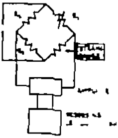


THE PICK UP UNIT
(STRAIN GAGE ARCH)



SIMPLEST FORM OF THE STRAIN GAGE ARCH DEPENDING ONLY ON I S LAT G RESINS FOR ELEC TR CAL PROTECTION

EXPLODED DIAGRAM OF METAL ENCASED STRAIN G GE ARCH

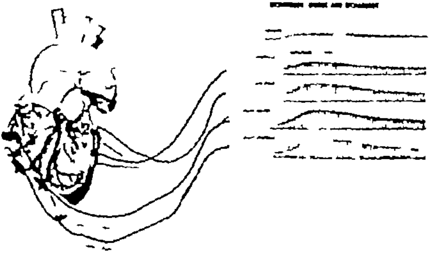


THE RECORDED CHANGES IN CARDIAC FORCE ARE CONSIDERED TO REPRESENT WITH REASONABLE VALIDITY THE CHANGES OF THE VENTRICULAR MASS SINCE:

1 MULTIPLE SIMULTANEOUS RECORDINGS OF CARDIAC FORCE FROM DIFFERENT LOCATIONS ON THE TWO VEN TRIC[illegible] GIVE CLOSELY [illegible] WITH TYPICAL DRUGS [illegible]

2 THE RESULTS ARE IN AGREEMENT WITH OTHER INDICES OF THE FORCE OF THE HEART BEAT SUCH AS CHANGES IN THE DURATION OF ISOMETRIC CONTRACTION AND CHANGES IN THE RAPID EJECTION PHASE [illegible]

3 SECONDARY CHANGES ATTRIBUTED TO DISCHARGE FROM THE ADRENAL MEDULLA HAVE BEEN CORRELATED WITH CHEMICAL DETERMINATIONS OF EPINEPHRINE AND NOR EPINEPHRINE PLASMA LEVELS

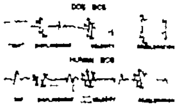


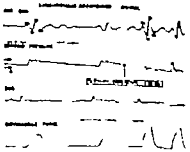
IN PATIENTS THE BALLISTOCARDIOGRAPH OFFERS ONE OF THE MOST PROMISING EXPERIMENTAL METHODS FOR ESTIMATING CHANGES IN HEART FORCE PORTABLE MACHINES ARE AVAILABLE WHICH CAN BE USED AT THE BEDSIDE WITH ABOUT THE SAME TECHNICAL SIMPLICITY AS OBTAINING AN ELECTROCARDIOGRAM EXPERIMENTAL ESTIMATION OF HEART FORCE CHANGES BY THIS TECHNIC FOLLOWS THE LINES FIRST DEVELOPED BY STARR HAMILTON DOCK AND OTHERS

THE STUDIES SHOWN HERE ARE BASED ON:

1 SIMULTANEOUS RECORDINGS IN ANIMALS OF ACCELERATION BALLISTOCARDIOGRAMS PULSE PRESSURES HEART FORCE AND E C G EXCURSIONS

2 ACCELERATION BALLISTOCARDIOGRAMS OF NORMAL INDIVIDUALS AND OF PATIENTS IN SHOCK IN BOTH INSTANCES SYMPATHOMIMETIC AMINES HAVE BEEN USED WHICH INCREASE HEART FORCE AND RAISE BLOOD PRESSURE (AS EPINEPHRINE AND NOR EPINEPHRINE) AND AGAIN SYMPATHOMIMETIC AMINES WHICH HAVE LITTLE EFFECT ON HEART FORCE BUT MARKEDLY RAISE BLOOD PRESSURE (AS PHENYLEPHRINE OR NEO SYNEPHRINE)

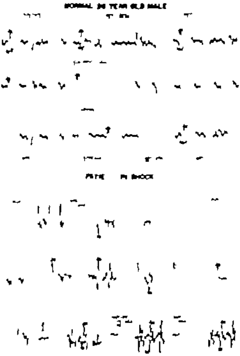




RECORDINGS WITH THE ARBEIT D V A BALLISTOCARDIOGRAPH ACTUATING A DIRECT WRITING ELECTROCARDIOGRAPH

AN INCREASE IN HEART FORCE CAN BE RECOGNISED BY A SHORTENING OF THE INTERVAL BETWEEN WAVES OF THE B C G AND BY AN INCREASE IN AMPLITUDE OF THE WAVES OF THE B C G THESE EFFECTS HOWEVER ARE OPPOSED BY AN INCREASE IN DIASTOLIC PRESSURE AND THIS FACTOR IS *CRITICAL WHENEVER THERE ARE* SUBSTANTIAL CHANGES IN THE LEVELS OF DIASTOLIC PRESSURE

[illegible]



CLINICAL IMPLICATIONS

1 EPINEPHRINE AND NOR EPINEPHRINE (LEVOPHED) ARE VIRTUALLY IDENTICAL IN THEIR EFFECTS ON HEART FORCE BOTH BEING POTENT STIMULANTS

[illegible]

THE VALUE OF NOR EPINEPHRINE IN ACUTE MYCARDIAL INFRACTION WITH SHOCK AND FAILURE IS DUE IN ONSIDERABLE PART TO ITS EFFECT IN INCREASING THE PUMPING POWER OF THE REMAINING COMPETENT PORTIONS OF THE MYOCARDIUM

[illegible]

2 A CONSIDERABLE NUMBER OF SYMPATHOMIMETIC AMINES PRODUCE MARKED AND PROLONGED INCREMENTS OF HEART FORCE SUCH VARIANTS OF EPHEDRINE INCLUDE MEPHENTERMINE (WYAMINE) AND AN ALIPHATIC AMINE (ARANTHOL) AS COMPARED TO DIGITALIS THEY PROVIDE GREATER INCREMENTS OF HEART FORCE WITH LESS TENDENCY OF ARRHYTHMIAS

[illegible]

3 TWO OF THE COMMONLY USED SYMPATHOMIMETIC AMINES ARE DISTINGUISED BY RELATIVELY SLIGHT CAPACITY TO INCREASE HEART FORCE WITH HYPERTENSIVE DOSES THESE AMINES PHENYLEPRINE (NEOSYNEPHRINE) AND MET OXAM NE (VASOXYL) ARE CONTRA INDICATED IN EART FAILURE BUT HAVE SPECIAL ADVANTAGES I CONDITIONS W ERE T E HEART IS FULLY COMPETENT IN T AT T E ARRHYT MIA TENDENCY OF THESE DRUGS IS RELATIVELY REDUCED

[illegible]

4 T ERE IS A COMMON IDENTITY IN THE THERAPEUTIC RATIO OF T E NUMEROUS DIGITALIS PRINCIPLES AND RELATED CARDIO ACTIVE GLYCOSIDES T E RATIO BETWEEN DOSES PRODUCI G SUBSTANTI L CONTRACTILE FORCE INCREMENTS AND DOSES PRODUCING TOXIC ARR YT MIAS HAS BEEN MEASURED FOR SEVERAL OF T E CO MON REPRESENTATIVE ACTIVE PRINCIPLES WITH THE CONCLUSION T AT THEIR RELATIVE ADVANTAGES ARE LIMITED TO OTHER FEATURES SUCH AS RAPIDITY OF ACTION ABSORBABILITY ETC

[illegible]

5 T E GREATER DEPRESSION OF HEART MUSCLE BY C LOROFORM AS COMPARED TO OTHER ANESTHETICS HAS BEEN VERIFIED BY THIS METHOD WHICH IS PECULIARLY SUITED TO THE MEASUREMENT OF CHANGES TAKING PLACE DURING T E TRANSITION FROM CONSCIOUSNESS TO ANESTHESIA

[illegible]

6 THE SAME STUDIES HAVE INDICATED THAT AN IMPORTANT BASIS FOR THE SAFTY OF ETHER IS DUE TO ITS SYMPATHO ADRENAL ACTIVITY THIS OBSERVATION HAS ALSO BEEN MADE BY OTHER MET ODS

[illegible]

7 E USE OF H G CO CENTR TIONS OF CARBON DIO DE S A CONVULS NG AGENT IN MENTAL D SEASES IS SSOC ATED WITH MAR ED DEPRES S O OF THE MYOCA DIUM

[illegible]

8 YPOTHERM A PRODUCES A MODERATE INCREASE IN EA T CONTR CTILE FORCE DESPITE AN EXTREME DECREASE IN HEART RATE BLOOD PRESSU E AND CARD AC OUTPUT

9 DURING HYPOTHERMIA SYMPATHOMIMETIC AMINES PRODUCE PPROXIMATELY TYPICAL P ESSOR ND HEART FORCE STIMULAT NG EF ECTS ON T E OT ER ND RESPONSES TO D GITAL S ARE CO SIDERABLY REDUCED BY YPOTHERMI

[illegible]

Portal Hypertension.

Franklin B. Moosnick and Jack G. Webb, Lexington, Ky

The various etiological factors that may result in portal hypertension are presented, together with the representative pathology and the sites of localization in the portal system. From this point, the alterations in physiology that may result are listed, and the manner in which these changes produce the characteristic symptoms and findings of portal hypertension is shown. This phase is amplified with discussion of diagnosis and treatment. Medical and surgical handling of the patient are presented, with emphasis on the control of ascites and on the emergency care of the patient with esophageal bleeding. Finally surgical procedures for the relief of portal hypertension are presented with demonstrations of portal-caval and splenorenal shunts, discussion of patient selection, and pre and postoperative care.

Electrical Impedance Plethysmography and Constant Mass Displacement Ballistocardiography

Jan Nyboer, Harper Hospital, Detroit, and Roger Shannon, George Washington Medical School, Washington, D. C.

An electronic amplifier designed to detect and record the electrical impedance variations of biological conductor, physical or chemical transducer is demonstrated. This unit is adapted for measurement of bed displacement ballistocardiograms. A human subject may be used to illustrate the technique involved in electrical plethysmography based on variations in conductance properties of the body tissues associated with variations in blood volume content in the segment. The physiological, physical, chemical, and pathological factors influencing these impedance measures are outlined. Charts and graphs illustrate the principles of recording cardiac ballistics, segmental volume pulsations, segmental clearance, or appearance of electrolyte indicators of space and blood flow as indexes of the circulatory activity

High Blood Pressure: A New Approach to Its Management.

Harold B. Eiber, New York Medical College, Flower and Fifth Avenue Hospitals, New York.

No one basic preparation is vailable today that adequately controls moderate and severe hypertension. More than one preparation is essential for satisfactory treatment. Almost all of these combinations are usually initiated in hospital; other combinations present serious complications. This exhibit presents new approach to this problem. Chlorpromazine, acting as potentiating agent, enhances the antihypertensive effect of several known preparations including Rauwolfia serpentina crude root and alkaloids. Two hundred and fifty ambulatory patients treated with this new combination for 18 months showed marked blood pressure reduction, symptomatic relief, improved renal function, reduction of cardiac size, and fundus improvement, without complications or serious side-effects. Results of the use of chlorpromazine in combination with Rauwolfia serpentina in the treatment of hypertension, senile agitated states, and various psychiatric conditions are also reported for the first time

The Diagnosis of Hemorrhagic Disorders.

Mario Stefanini and James H. Graham, St. Elizabeth's Hospital and Tufts College Medical School, Boston.

The exhibit presents graphic review of the mechanism of hemostasis and of the screening and more specialized techniques used to identify and classify most hemorrhagic disorders. It discusses the clinical problems presented by the various hemorrhagic disorders and illustrates the main clinical and laboratory findings in each of them. The basic forms of treatment in the various hemorrhagic disorders are shown.

Choline Theophyllinate, A New Oral Theophylline Compound—A Clinical Pharmacological Study

Herbert S. Kupperman, Sidney Dann, Frederick R. Brown, and John Gagliani, New York University-Bellevue Medical Center New York.

Choline theophyllinate, highly soluble and stable salt of choline theophylline, relatively strong base and weak acid, has been subjected to clinical and pharmacological studies. Theophylline blood levels, after oral administration of choline theophyllinate, were some 60 to 70% greater than those observed after comparable doses of aminophylline with or without aluminum hydroxide. Choline theophyllinate proved to be a superior medicament for the control of bronchial asthma as measured by spirometric studies and clinical studies. It also proved to be very effective medicament for the treatment of premenstrual molimina. Oral administration of choline theophylline was associated with less gastrointestinal irritation than aminophylline with or without aluminum hydroxide.

Iron Metabolism.

Charles E. Rath, Georgetown University School of Medicine, Washington, D. C., and Clement A. Finch and A. G. Motulsky University of Washington School of Medicine, Seattle.

The pathophysiology of normal iron metabolism is portrayed with special reference to serum iron regulation, iron stores, and iron needs as varying with age and sex. The development of iron deficiency is depicted, stressing the depletion of iron stores; diagnosis of iron deficiency anemia and its treatment (including intravenously given iron) are outlined. The pathogenesis, clinical manifestations, diagnosis, and phlebotomy therapy of iron storage disease (hemochromatosis) are illustrated. The use of plasma and red blood cell turnover determinations as measurement of erythropoiesis in variety of anemias is included.

The Effect of Heparin on Plasma Lipids in Abnormal States of Lipid Metabolism.

Joseph Herzstein, Chun-I-Wang, and David Adlersberg, Mount Sinai Hospital, New York.

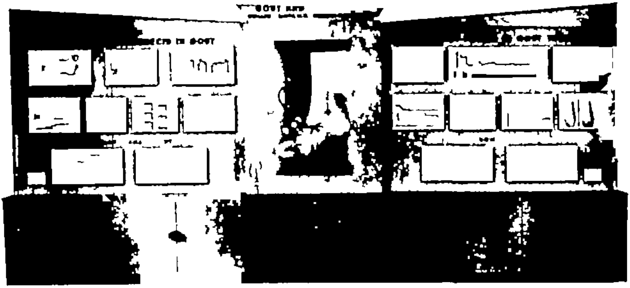
The effect of intravenously or intramuscularly injected heparin on plasma clearing and lipid partition was studied in patients with nephrosis, idiopathic hyperlipemia, and idiopathic hypercholesteremia and in normal controls. Plasma opacity was reduced after heparin in all groups but to a variable extent; the plasma in individuals with nephrosis and idiopathic hyperlipemia cleared least. In all patients there occurred an appreciable reduction in total lipids, primarily in neutral fat content. Light transmission of plasma was associated only in general way with its lipid content.

Reduction of Hypercholesteremia with Sitosterol.

R. E. Shipley Eli Lilly and Company Indianapolis

The exhibit presents experimental and clinical data showing the effect of oral administration of sitosterol on serum cholesterol concentration. In rabbits receiving cholesterol in the diet, hypercholesteremia and atherosclerosis can be largely prevented if sitosterol is orally administered simultaneously. Sitosterol is plant sterol, is closely related to cholesterol, and appears to prevent the intestinal absorption of cholesterol by mechanism that involves the formation of mixed crystal with cholesterol. The clinical effectiveness of sitosterol in reducing hypercholesteremia will be illustrated, as well as its possible mechanism of action.

HONORABLE MENTION

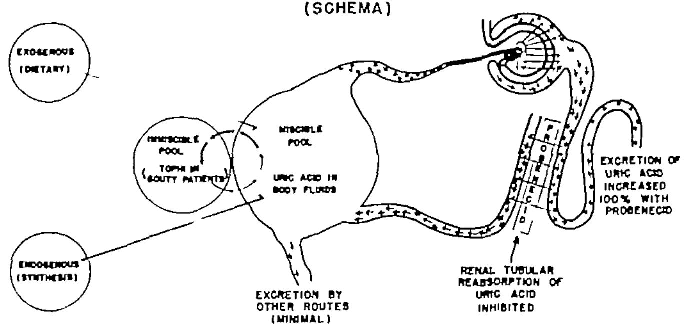


Gout and Probenecid.

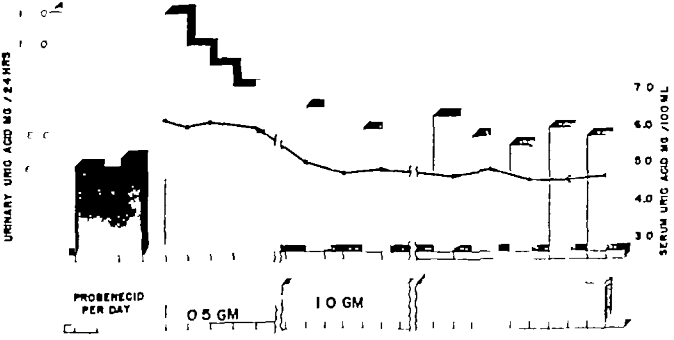
WILLIAM P BOGER, Norristown State Hospital, Norristown Pa., and RICHARD T SMITH, Benjamin Franklin Clinic, Philadelphia.

Data are presented showing the long-term benefits of the use of probenecid not only in the control of hyperuricemia but also in the direction of lessening the size of established tophi, preventing the formation of new tophi, and the actual healing of certain destructive tophaceous lesions. Roentgenologic evidence of the healing of destructive lesions in the bones of gouty patients is presented. The physiological influences of probenecid in the gouty patient are shown and case reports presented to show the alleviation of the course of chronic gout both in terms of uric acid deposition and in reduction of the number of acute gouty attacks. The use of probenecid is correlated with the use of other medicaments such as colchicine phenylbutazone, salicylates, and steroids in the management of gout.

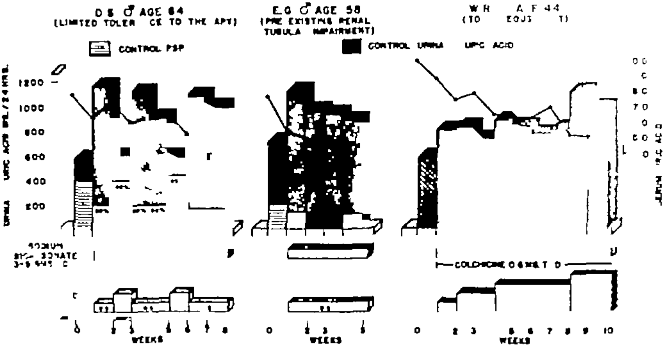
PROBENECID EFFECT ON URIC ACID POOL
(SCHEMA)



URINARY URIC ACID EXCRETION WITH PROBENECID
AVERAGE DOSAGE SCHEDULE
NON-TOPHACEOUS GOUT
A M ♂ 55 YRS GOUT-8YRS

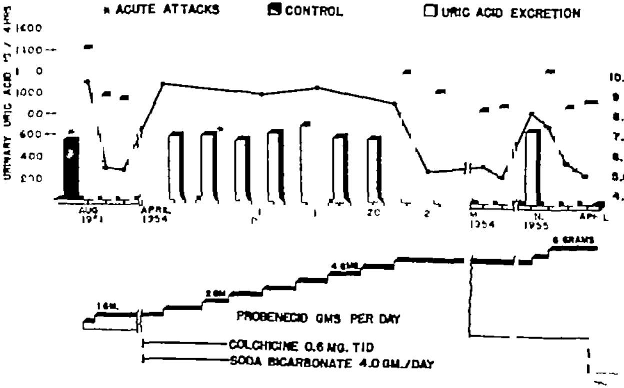


ATYPICAL PROBENECID REQUIREMENTS

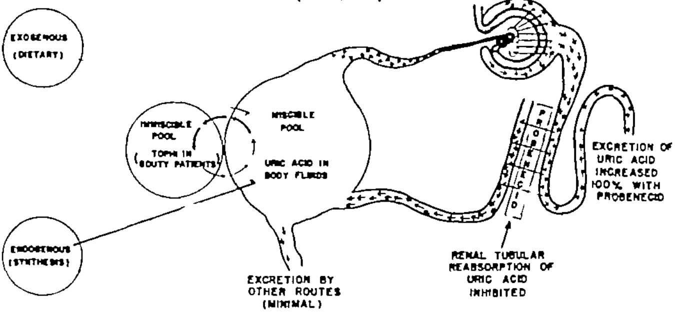


URINARY URATE EXCRETION AS GUIDE TO PROBENECID DOSAGE

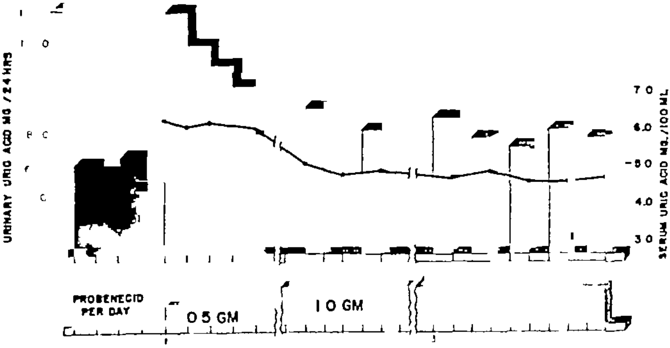
F C ♂ 54 YRS 5 YRS DURATION



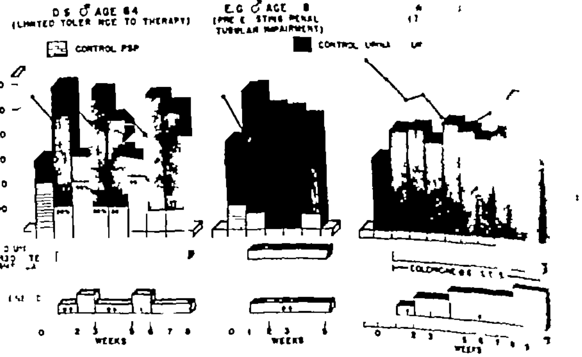
PROBENECID EFFECT ON URIC ACID POOL
(SCHEMA)



URINARY URIC ACID EXCRETION WITH PROBENECID
AVERAGE DOSAGE SCHEDULE
NON-TOPHACEOUS GOUT
A.M ♂ 55 YRS GOUT-8YRS



ATYPICAL PROBENECID REQUIREMENTS



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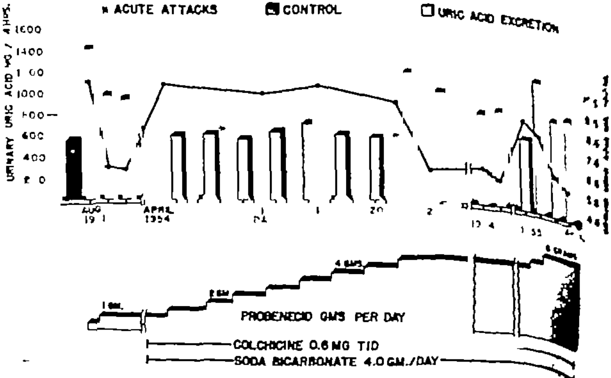
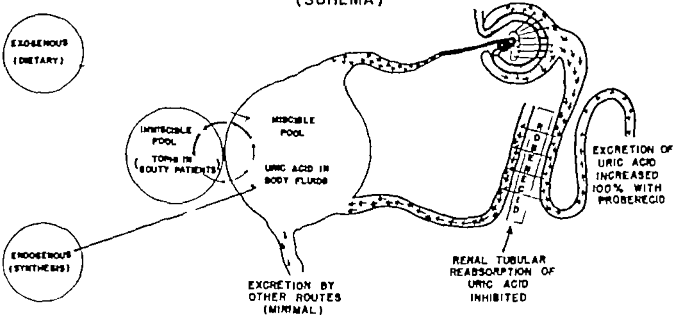
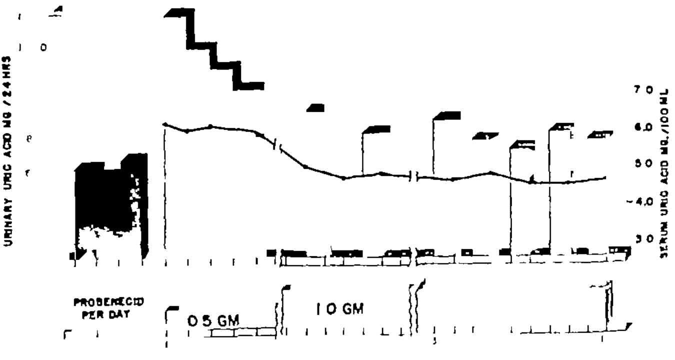


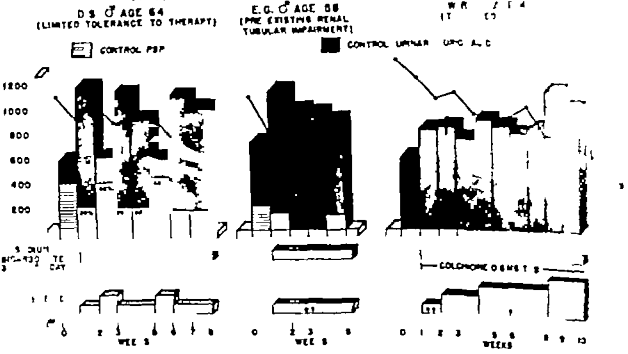
PROBENECID EFFECT ON URIC ACID POOL
(SCHEMA)



URINARY URIC ACID EXCRETION WITH PROBENECID
AVERAGE DOSAGE SCHEDULE
NON-TOPHACEOUS GOUT
A M ♂ 55 YRS GOUT-8YRS

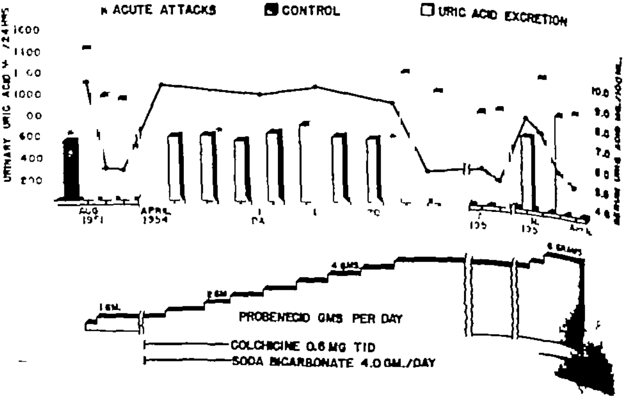


ATYPICAL PROBENECID REQUIREMENTS



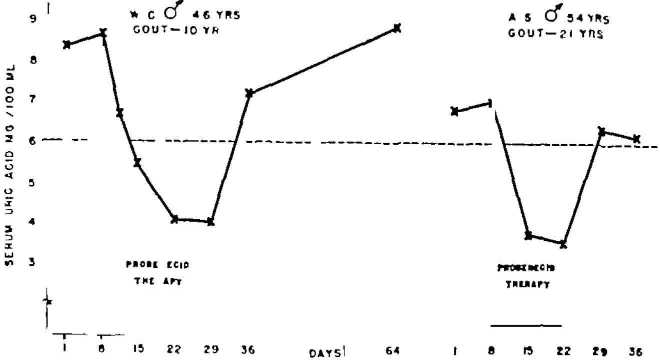
URINARY URATE EXCRETION AS GUIDE TO PROBENECID DOSAGE

F C ♂ 54 YRS 5YRS DURATION

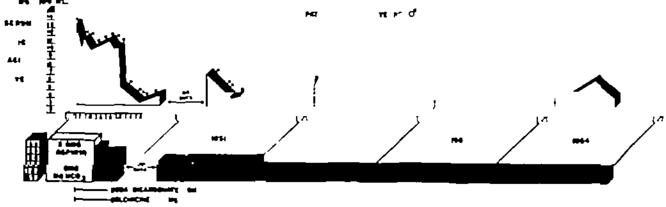


REVERSIBILITY OF PROBENECID EFFECT ON SERUM URIC ACID CONC

2 GM PROBENECID / DAY



URICOSURIC EFFECT OF PROBENECID IN GOUT



CHRONIC GOUT

A. - INSTITUTE PROBENECID THERAPY AS IN INTERVAL THERAPY

B - AFTER 2-4 WEEKS IF THERAPY IS INADEQUATE INCREASE BY 0 5 GMS EVERY 2-4 WEEKS WHEN TOPHI AND / OR RESIDUALS DISAPPEAR REDUCE DOSAGE 0 5 GMS EVERY 2 4 WEEKS TO A MAINTENANCE OF 1 GM / DAY

C - CONTINUE SODA BICARBONATE 3-8 GMS / DAY UNTIL PROBENECID DOSAGE IS DECREASED

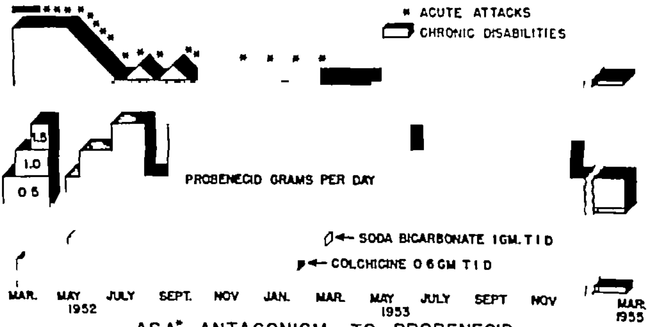
EMERGENCY

A. - PRE OPERATIVELY 1/100 GRAIN COLCHICINE T I D FOR 1-3 DAYS AND CONTINUE 3 5 DAYS POST-OPERATIVELY

B - ACUTE ATTACKS PRECIPITATED BY ACUTE INFECTIONS EXPOSURE TO COLD OR TRAUMA MAY BE ABORTED BY PROPHYLACTIC COLCHICINE 1/100 GRAIN T I D 3 5 DAYS

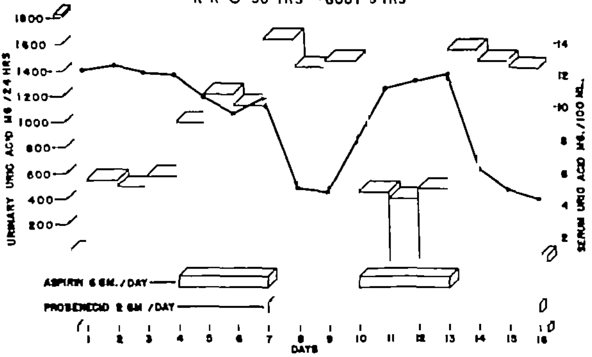
THE EFFECT OF PROBENECID ON CHRONIC DISABILITIES AND ACUTE ATTACKS

G W ♂ AGE 71 YEARS CHRONIC TOPHACEOUS GOUT-12 YEARS



ASA* ANTAGONISM TO PROBENECID SERUM URIC ACID CONC AND URICOSURIC EFFECT

K R ♂ 50 YRS - GOUT 9 YRS

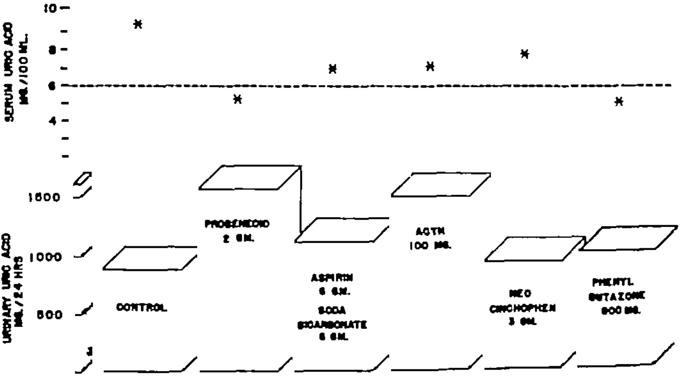


*ASA ACETYLSALICYLIC ACID

COMPARISON OF URICOSURIC AGENTS

R M ♂ 52 YRS DURATION 12 YRS

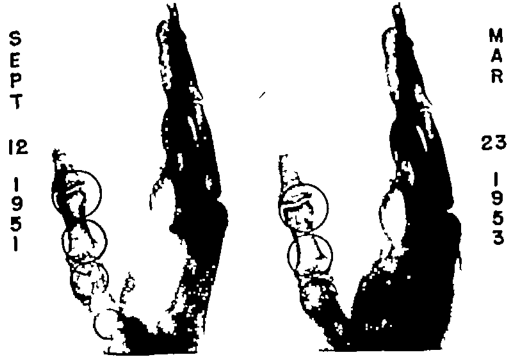
SINGLE DAY THERAPIES WEEKLY INTERVALS



DISAPPEARANCE OF URIC ACID DEPOSITS IN BONE

W S 62 YRS ♂ DURATION – 18 YEARS

18 MO THERAPY 1.5 GRAMS PROBENECID DAILY



PROBENECID DOES

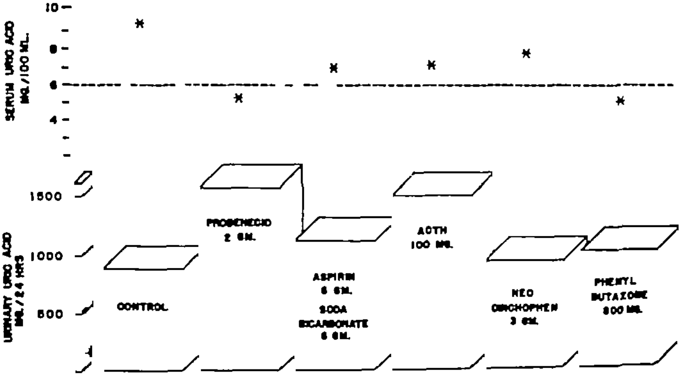
1. DOES HAVE A PRONOUNCED URICOSURIC EFFECT
2. DOES CAUSE A DECREASE OF THE SERUM URIC ACID
3. DOES DECREASE THE MISCIBLE POOL OF URIC ACID
4. DOES STOP OR LESSEN THE OCCURRENCE OF ACUTE ATTACKS IN MOST INSTANCES OF GOUTY ARTHRITIS
5. DOES HAVE A WIDE MARGIN OF SAFETY NON TOXIC AFTER 3 YEARS CONTINOUS THERAPY IN MANY PATIENTS
6. DOES RETURN MANY GOUTY INVALIDS TO GAINFUL OCCUPATION

PROBENECID DOES NOT

1. DOES NOT ACT AS AN ANALGESIC DURING ACUTE ATTACK
2. DOES NOT CURE AN ACUTE ATTACK OF GOUTY ARTHRITIS
3. DOES NOT ALTER URIC ACID METABOLISM THE GOUTY DEFECT

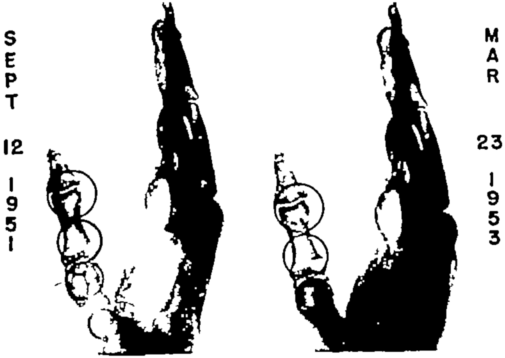
COMPARISON OF URICOSURIC AGENTS

R M ♂ 52 YRS DURATION 12 YRS
SINGLE DAY THERAPIES WEEKLY INTERVALS

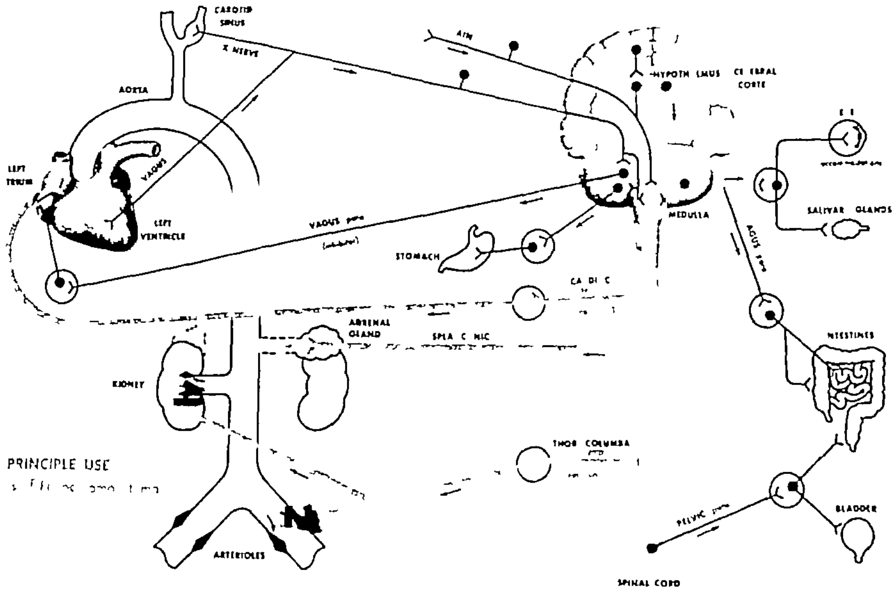


DISAPPEARANCE OF URIC ACID DEPOSITS IN BONE

W S 62 YRS ♂ DURATION – 18 YEARS
18 MO THERAPY 1 5 GRAMS PROBENECID DAILY

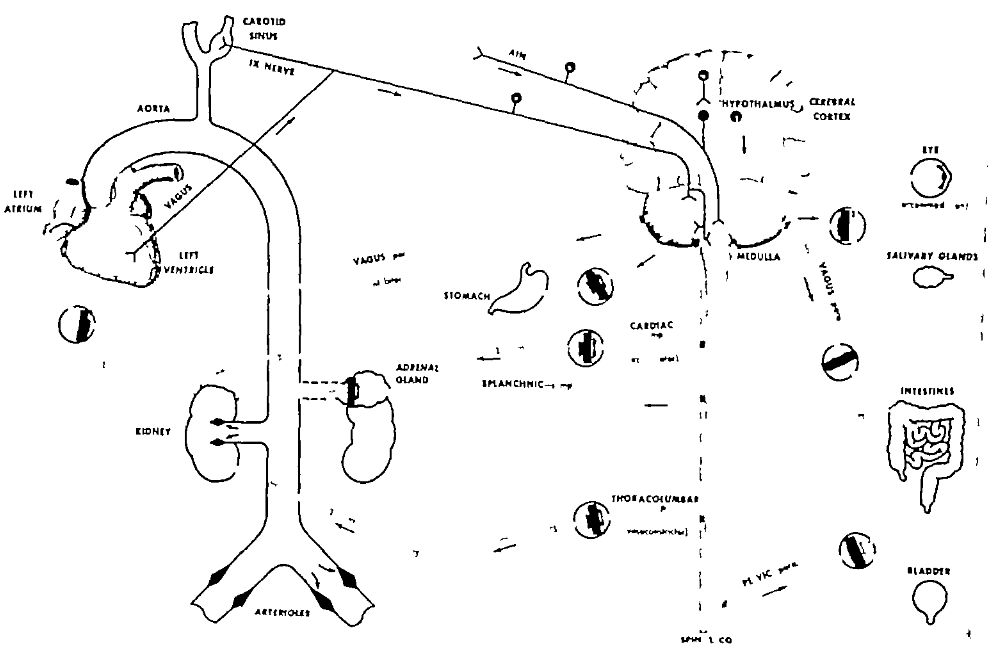


ADRENERGIC BLOCKADE

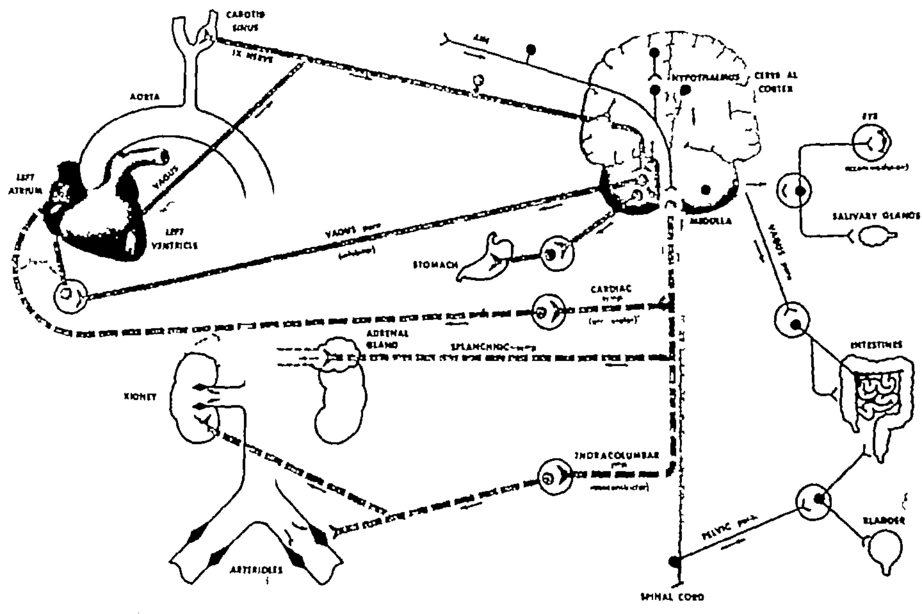


PRINCIPLE USE

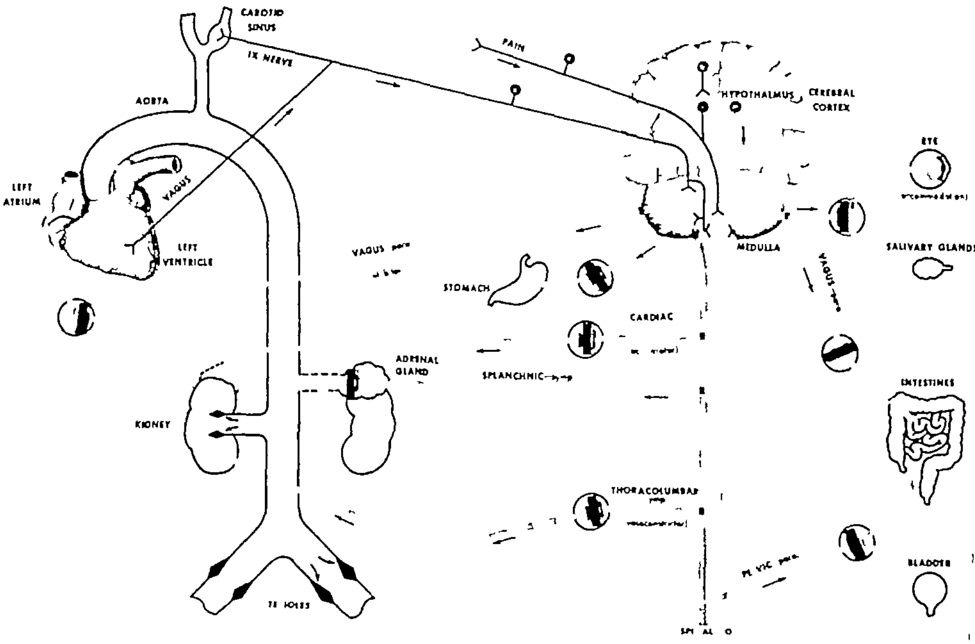
GANGLIONIC BLOCKADE



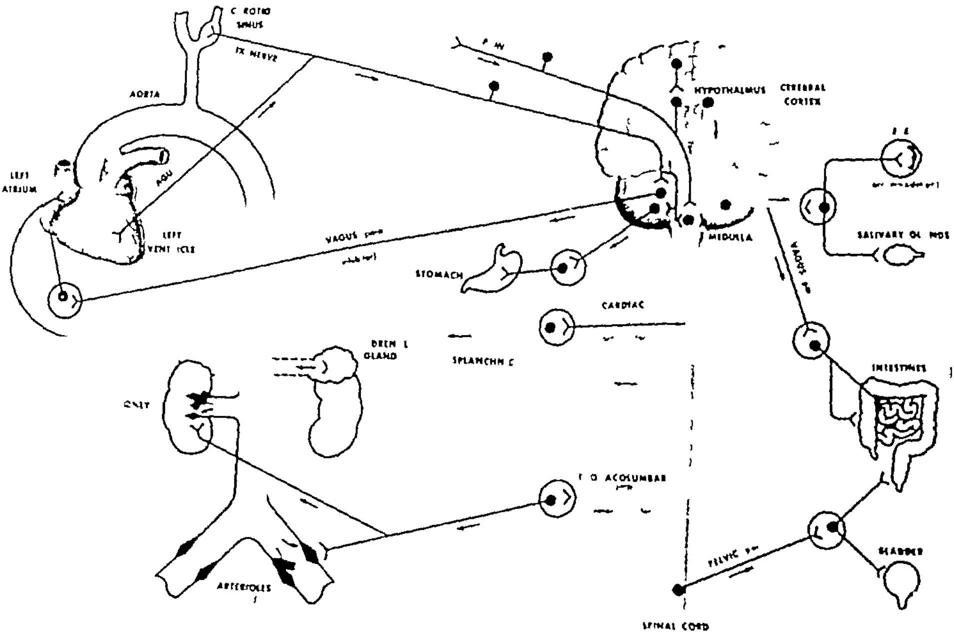
DEPRESSOR REFLEX ENHANCEMENT



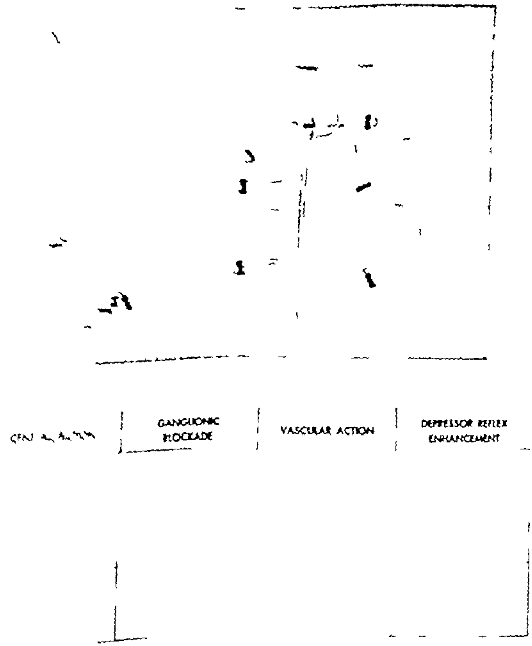
GANGLIONIC BLOCKADE



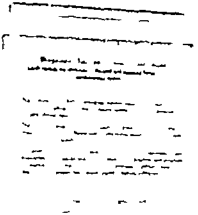
VASCULAR AC



C ROTID SINUS
IX NERVE
AORTA
LEFT ATRIUM
LEFT VENT ICLE
VAGUS
STOMACH
CARDIAC
HYPOTHALAMUS
CEREBRAL CORTEX
MEDULLA
SALIVARY GL NDS
VAGUS
INTESTINES
DREN L GLAND
SPLANCHN C
ARTERIOLES
PELVIC
BLADDER
SPINAL CORD

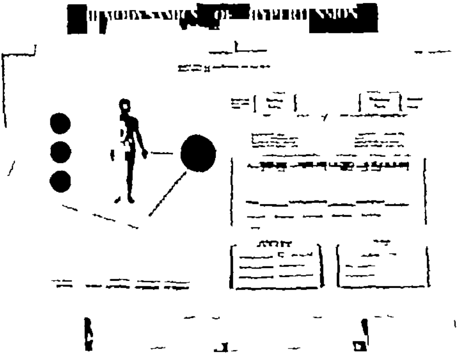


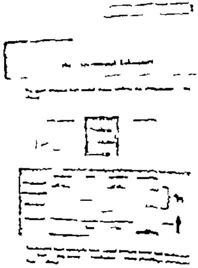
[illegible] Combi[illegible]ion Therapy



Hemodynamic Effects of Hypertension: A Ballistocardiograph Study

SIDNEY R. ARBEIT PIERRE MORET and GERALD EURMAN,
Jersey City N J





The exhibit shows the effects on the displacement, elocity and acceleration ballistocardiogram of lowering and raising the blood pressure and of increasing and decreasing the cardiac propulsive force By correlating these changes with similar effects in the experimental animal it becomes possible to visualize the hemodynamic alterations that accompany the ballistocardiograph changes.

A Diagnostic Tool and Clinical Instrument

which records the resolution of the total and opposing forces of the cardiovascular system

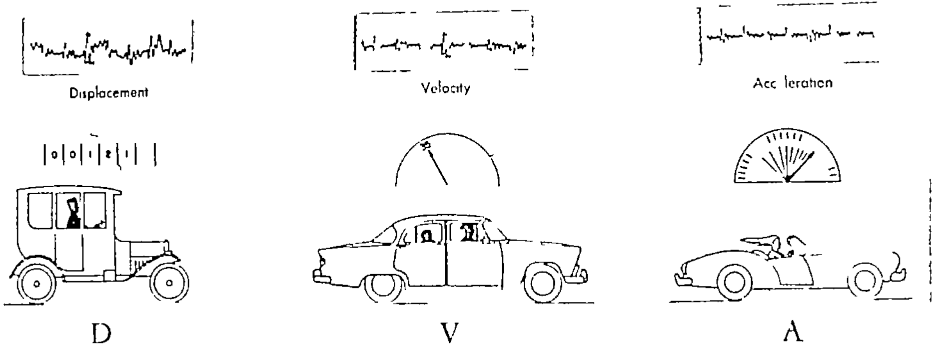
- The analysis of the Ballistocardiogram supplies important information as to the functional efficiency of the circulatory system that can be obtained by no other clinical means

- The Ballistocardiograph is an instrument of great sensitivity capable of supplying a new and different kind of information about the functional state of the circulatory system

- Ballistocardiography is on the threshold of further great advances in our knowledge of physiology and its application to the diagnosis and prognosis of disease Given one test with which to evaluate a patient s myocardial strength, at the present time I would request a ballistocardiogram

The D-V-A Ballistocardiograms

Analysis of Force

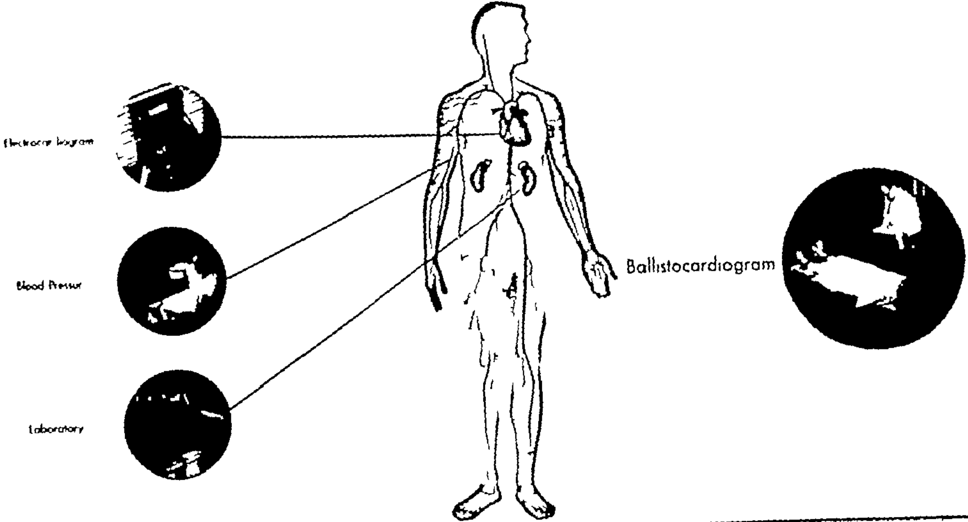


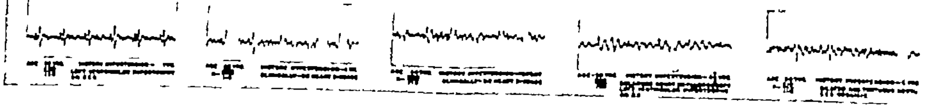
As is true of any new method, the BCG has its violent protagonists as well as antagonists. It has been described by some as the millenium in medicine, the crystal ball that tells about the future of the heart, the automatic diagnoser that replaces the clinician. Others have just as vehemently denounced it as worthless junk, a complicated machine that tells nothing about anything, an accidental phenomenon of no significance.

... at the BCG can be a very precise instrument that measures physical ... amazing accuracy. Its primary defect has always been not in the ... in the operator. In taking any measurement the limiting factor is the ... the instrument, in reading any graph of such a measurement the limiting ... of the operator.

The forces impressed on the body by the propulsive effect of the heart cover a frequency range of not less than 1 to 70 cps. In the direct body BCG method the displacement BCG measures the bottom end of this spectrum, the velocity curve is moderately accurate only in the zone of body resonance (from 3½ to 4 cps) the acceleration curve alone is able to follow and accurately reproduce the rapid changes of force contained in the upper 80% of the frequency spectrum.

It is proposed that the BCG provides an excellent method for correlating ... in dog and human. The simultaneous ... physiologic phenomena ... permit new insight into the ... the BCG ... the human.


Blood Pressure
Laboratory
Ballistocardiogram

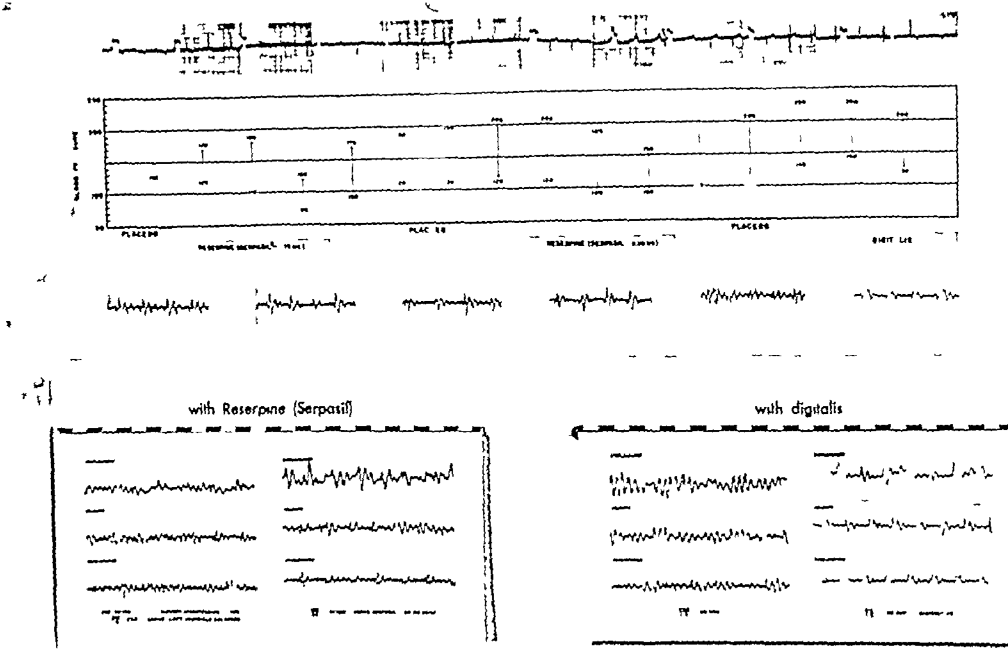


There is [illegible] profile form or grade of BCG [illegible] hypertensive [illegible] may [illegible] the [illegible] normal [illegible] the [illegible] depending on the extent and duration of the hypertension [illegible] the [illegible] borderline (4) abnormal, and (5) chaotic. [illegible] normal, (2) some low grade changes, (3) borderline (4) abnormal, and (5) chaotic.

In hypertension when the BCG is abnormal, improvement follows hypotensive therapy reflecting a restoration of the balance of forces.

In hypertension the abnormal BCG reverts toward normal in spite of sustained elevated blood pressure by increasing available cardiac force.

The BCG is [illegible] the motion of the body [illegible] shape of this motion is the result [illegible] [illegible] effort [illegible] normal load [illegible] the BCG [illegible] load (as in sustained [illegible]) the BCG [illegible] ability of the heart to overcome this load.

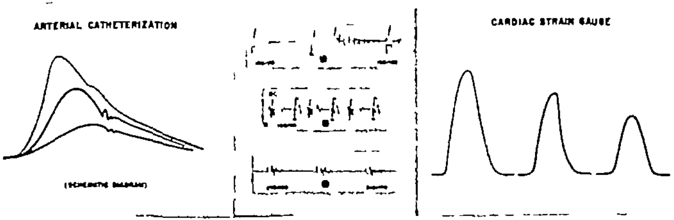


When the BC (is hypertensl pa ient is abnormal it can be reverted tow d ue m l by dec asing the load on the hea (educing the blood pressur) Exper ment lly that same improvement the BC(be hieved by imp ov ng he f nctional st ength of the my c d m (digitalis ng)

in the Experimental Laboratory

- The direct evidence from animal studies confirms the interpretation of the clinical BCG

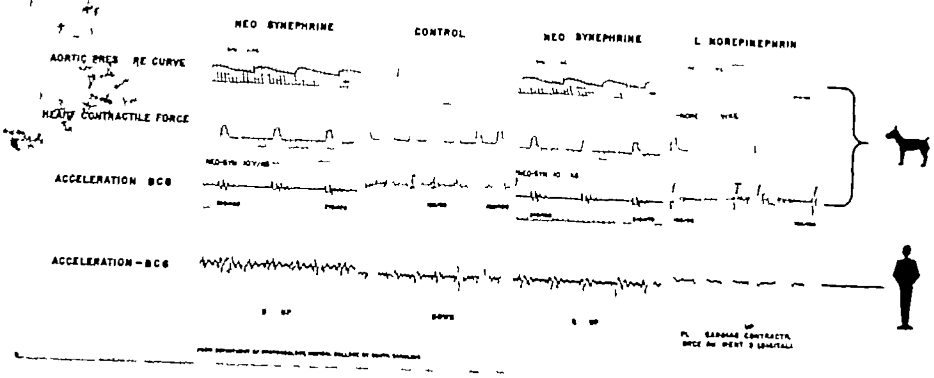
Methods



Contractile Force

Carotid Pressure

When the measured he t ontrac le k is re cased by t ect tue se lat ng d ugs the aortic presu ises mor ha ply nd pe k 1 nd the t me I ters l to the d rot not b is shortened 1 hese ma rices the ler t on BCG is increased in mplitude nd he ons tune ter h lim er d (ensly hen the load on the he t ased he he ont le fo is de ased nd the aortic presu cu ses lowly nd peak lat nd be l m b is lela ed The accompanying ac ler ion BCG is decreased ampl ude and lose t spec fic complex form.



C Simultaneous heart contractile force, carotid pressure curves and acceleration BCG from the dog, permit the visualization of similar physiologic phenomena from the clinical BCG

When the dog is made h pertensi [illegible] a Neo [illegible] BCG [illegible] contractile [illegible] declines [illegible] aortic pressu [illegible] flattened (bott [illegible] panel) the deter [illegible] BCG of patie [illegible] long stand ing hypertension.

Ret [illegible] the dog [illegible] the h [illegible] BCG tow [illegible]

The p [illegible] the dog [illegible] human [illegible]

Dog [illegible] the same [illegible] over comes the [illegible] load and the BCG [illegible] as the [illegible] pressu [illegible] The same BCG change [illegible] be [illegible] produced [illegible] (bottom panel)

Autonomic Blocking Drugs Ulcer—Hypertension

KEITH S GRIMSON FRANK H LONGINO, and BENJAMIN H FLOWE, Duke University School of Medicine, Durham, N C.

A life-size figure shows the autonomic nervous system supplying the stomach and the blood vessels, heart and adrenal glands, including the sites of action of the drugs. The selectively parasympathetic quaternary ammonium drugs studied—methantheline diphemanil, propantheline, antrenyl, penthienate methscopolamine, and bemonium—are shown, as well as the orally effective ganglion blocking drugs, hexamethonium, pentolinium, and Su 3088. The therapeutic principles common to all of these compounds are listed emphasizing effective dose, site of action, and antidotes. Observations on the drugs for ulcer including therapeutic trial, are shown, also extending similar observations for drugs for hypertension. Conclusion concerning treatment for each disease process is presented.

•SUMMARY, DRUGS FOR HYPERTENSION•

ACTIONS OF DRUGS WERE MOST UNIFORM BY INJECTION

TWO TYPES OF DRUG ACTION WERE DEMONSTRATED BY CONSECUTIVE INTRAVENOUS INJECTIONS OF INCREASING AMOUNTS IN DOGS.

1. <u>ETAMON LIKE</u>

   Hexamethonium in doses of .1 to .5 mg/kg produced an abrupt drop of blood pressure with a 50% return toward the pre-injection level in 5 to 15 minutes. This drop and rise was repeated with consecutive injections until doses of 5 or 10 mg/kg produced levels of 70 to 40 mm. Hg.

2. ANSOLYSEN & ECOLID

   These drugs differed from Etamon and hexamethonium. With doses of .05 to 2. mg/kg a reduction of blood pressure occurred progressively and step-wise without drop and partial recovery. Pressure levels often remained 90 to 130 mm. Hg. and seldom dropped to 70 mm. Hg. Additional doses of 10 to 20 mg/kg. caused little or no added reduction.

IN MAN, INJECTIONS OF HEXAMETHONIUM HAD AS AN ADVANTAGE THEIR CONTINUING ADDITIVE EFFECT WITH GREATER REDUCTIONS OF BLOOD PRESSURE. ANSOLYSEN OR ECOLID HAD AS AN ADVANTAGE THEIR LONGER DURATION OF ACTION

ACTIONS OF DRUGS VARIED WIDELY WHEN GIVEN ORALLY

A PARADOX EXISTS IN THAT HEXAMETHONIUM, THE DRUG LEAST EFFICIENTLY ABSORBED, PRODUCED THE MOST CONSTANT REDUCTION OF BLOOD PRESSURE WHEREAS ANSOLYSEN AND ECOLID ORALLY, DRUGS MORE EFFICIENTLY ABSORBED, PRODUCED FLUCTUATIONS. HEXAMETHONIUM PRESCRIBED BEFORE MEALS AND AT BEDTIME WAS SLOWLY AND CONTINUOUSLY ABSORBED FROM THE INTESTINAL TRACT. EFFECTS OF ANSOLYSEN GIVEN a.c. AND h.s. WERE VARIABLE. INTERVALS SHOULD HAVE BEEN 8 HOURS. RESULTS OF ECOLID WERE ENCOURAGING WHEN THE DRUG WAS GIVEN 1 HOUR BEFORE BREAKFAST AND AT BEDTIME.

THE RESULTS OF CLINICAL TRIAL

THE EFFICACY OF HEXAMETHONIUM ORALLY HAS BEEN ESTABLISHED

SYMPTOMS ARE RELIEVED BUT SIDE ACTIONS OF THE DRUG OCCUR:

SYMPTOMS OF HYPEFTENSION

Symptoms	Before Hexamethonium: Mild	Moderate	Severe	During Treatment: Mild	Moderate	Severe
Headache	38%	27%	11%	46%	0	0
Fatigue	62%	14%	0	27%	3%	0
Dizziness	64%	5%	0	19%	0	0
Palpitation	41%	0	0	16%	0	0
Dyspnea	35%	0	0	6%	0	0

SYMPTOMS CAUSED BY HEXAMETHONIUM

Symptoms	Mild	Moderate	Severe
Constipation	23%	16%	16%
Blurring of Vision	40%	19%	0
Dryness of Mouth	43%	6%	0
Slow Micturition	30%	5%	0
Epigastric Discomfort	14%	5%	0
Transient Hypotension	30%	14%	0

ANOLYSEN WAS FIRST USED IN PATIENTS IN 1953, ECOLID IN 1954. LONG RANGE EFFICACY IS NOT ESTABLISHED. AN APPROXIMATION TOWARD A COMPARISON IS POSSIBLE

THE COMPARISON OF THREE ORALLY ACTIVE GANGLION BLOCKING DRUGS

	HEXAMETHONIUM	ANSOLYSEN	ECOLID
Usual No. Tablets Day	12	3 to 9	2 or 3
Blurring of Vision		+++	+++
Constipation, Laxatives	+++	+	+
Decreased Force, Micturition	++	±	±
Dryness of Mouth	±	++	++
Postural Hypotension	++	fluctuating	fluctuating
Reduction, Supine Pressure	+++	fluctuating	fluctuating

GENERAL COMMENT

IT HAS BEEN ESTABLISHED THAT HYPERTENSION IS CAUSED BY AN INCREASE OF THE *PERIPHERAL RESISTANCE TO THE FLOW OF BLOOD. FACTORS WHICH CAUSE* THIS INCREASE ARE NEUROGENIC, HUMORAL AND VASCULAR DEGENERATIVE (ARTERIOLAR SCLEROSIS OR NECROTIZING ARTERIOLITIS).

ONLY THE NEUROGENIC FACTOR HAS BEEN SUPPRESSED BY THE GANGLION BLOCKING AGENTS. *NEVERTHELESS, CONTINUOUS USE OF THESE DRUGS* MAINTAINED REDUCTION OF BLOOD PRESSURE IN MANY PATIENTS AND DELAYED OR ARRESTED THE PROGRESSIVE INCREASE IN OTHERS. THE DRUGS APPROACHED THE EFFECTIVENESS OF SYMPATHECTOMY

PREDNISONE AND PREDNISOLONE COMPARATIVE, CLINICAL AND METABOLIC EVALUATION

LAURANCE W. KINSELL, M.D., GEORGE D. MICHAELS, Ph. D., MARJORIE COELHO, R.N., NADINE FOREMAN, M.D., and ROGER W. FRISKEY, M.D.

Institute for Metabolic Research, Highland Alameda County Hospital, and the Department of Medicine, Samuel Merritt Hospital, Oakland, California.

During the six years that corticoid preparations have been available for widespread clinical application, it has become apparent that the anti-inflammatory effects of these hormones are potentially extremely valuable. Certain other effects produced by the administration of these preparations interfere very seriously with their clinical usefulness. Among the undesirable effects is abnormal retention of salt and water with consequent edema and other attendant abnormalities.

Two synthetic compounds, which have recently become available appear to have profound anti-inflammatory effects i.e. they are fully as capable of "turning off" the inflammation of arthritis and other acute and chronic inflammatory diseases as are cortisone or hydrocortisone, but in ordinary dosage are free of the abnormal salt and water retaining effects which are so frequently encountered when one administers cortisone, hydrocortisone, or corticotropins. The clinical names of these two preparations are Δ-dehydrocortisone and Δ-dehydrohydrocortisone the generic names are prednisone (metacortandracin) and prednisolone

*Metabolic and other studies have been supported in part by grant-in-aid from the Schering Corporation.

Sodium diuresis, rather than sodium retention, may be encountered at times

(metacortandralone) (These compounds have been supplied to us for clinical and metabolic evaluation through the kindness of Dr Edward Henderson of the Schering Corporation under the trade names of Meticorten and Meticortelone.)

During the past six months, these two compounds have been used in a group of more than fifty people many of whom had been on long-term ACTH-cortisone-hydrocortisone therapy The observations in these patients lead to the following statements

1 Without exception all patients who had previously been maintained free of inflammatory disease on any of the other corticoids are at least equally well maintained on prednisone (metacortandracin) (Our experience with prednisone (metacortandralone) is still quite small)

2 In several patients in whom "completely suppressive therapy with any of the previously available corticoids was impossible because of the occurrence of major emotional instability or actual psychosis it has been possible to produce a full remission with Meticorten without any evidence of mental aberration (Very large amounts of prednisone (metacortandracin) may produce disorientation)

3 On the basis of experience so far it would appear that less vigorous salt restriction will be feasible i.e. that patients on chronic therapy with prednisone (metacortandracin) will be able to consume a somewhat more appetizing diet.

4 On the basis of metabolic studies, it appears that the use of a high protein diet supplemented with additional potassium will still be necessary with the new compounds i.e. both of the new preparations cause some increase in protein catabolism and a significant in crease in potassium excretion. (This may not be true in the lower dosages.)

5 The incidence of exacerbation of previously existing peptic ulcer is probably as great with prednisone (metacortandracin) as with any of the other corticoids in equivalent therapeutic dosage Presumably this effect is attributable, at least in large measure to the inhibition of the inflammatory response in the gastro-intestinal wall, which prior to that time had prevented penetration and/or perforation of the peptic ulcer It is essential therefore in any patient who has proven or probable peptic ulcer that an intensive anti-ulcer regimen be employed if any type of corticoid therapy is deemed to be mandatory It is also essential that all patients on corticoid therapy be checked routinely for the appearance of suspicious gastro-intestinal symptoms even though no previous ulcer history may have been elicited This is particularly so in view of the masking effect of corticoids upon the "classical" symptoms of gastro-intestinal catastrophies.

6 In common with the other corticoids prednisone (metacortandracin) and prednisolone (metacortandralone) tend to increase calcium and phosphorus excretion to a significant degree at least in some individuals. Therefore one must

I this exhibit are included only data from p tients whose treatment ha not been complicated by co-administration of other corticoids

consider the co-administration of anabolic steroids particularly in ... viduals who require more than average dosage for prolonged periods ... use of adequate amount of estrogen and/or testosterone will pr... abnormal losses of calcium and phosphorus in these patients

7 The average therapeutic dose of the new Δ^1 compound is ... one-fourth that of hydrocortisone In some individuals the ratio may be ... more favorable.

In terms of our total experience up to this time it would appea... nisone (metacortandracin) and possibly prednisolone (metacortand... potent compounds which ha e all of the desirable effects of cortisone a... cortisone and have significantly less of the undesirable effects. As in th... cortisone or hydrocortisone, prolonged administration of either of the Δ ... pounds will inhibit endogenous production of ACTH and hence result ... cortical atrophy It is, therefore essential that ACTH be co-admi... intervals in patients who are on chronic ma ntenance therapy It seems ... that weekly or semi-weekly administration of the new long acting ACTH ... be adequat to prevent dangerous adreno-cortical atrophy It is ... however that all patients who have been on prolonged corticoid thera... type, and who are exposed to periods of major stress e.g. major surgery ... supplemental ACTH and supplemental oral intramuscular and/or intra... steroids, if any suggestion of adrenal insufficiency appears

RHEUMATOID ARTHRITIS

NUMBER OF PATIENTS 14

SIDE EFFECTS

NONE

CLINICAL STUDIES

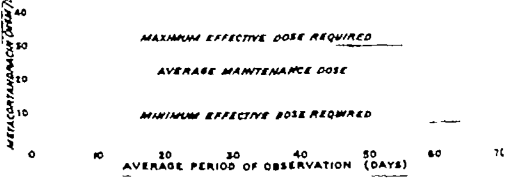
On the follow... ar shown the ... of some of the ... clinical and ... studies upon ... above statements ... based

Rheumatoid Arthritis. The most striking features in these and ... patients mainta ned on metacortandracin has been a profound decrea... some instances d sappear nce of Cushingoid appearance as compared ... noted during administration of comparable amounts of other corticoid... of these patients adequate therapy with other corticoids had been ... because of the de elopment of psychotic manifestations Fully suppress... with metacortandracin produced no untoward effects of this sort.

INTRACTABLE ASTHMA

NUMBER OF PATIENTS - 3

SIDE EFFECTS	CLINICAL CONTROL
NONE — — — — — — — — — 3	EXCELLENT — — — — — — 2
(CUSHINGOID APPEARANCE IN 2 PATIENTS FROM OTHER CORTICOID THERAPY CLEARED)	FAIR — — — — — — — — — — 1

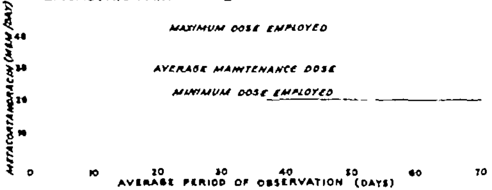


Asthma. These patients appear to be better stabilized on metacortandracin than on any combination of steroids previously used

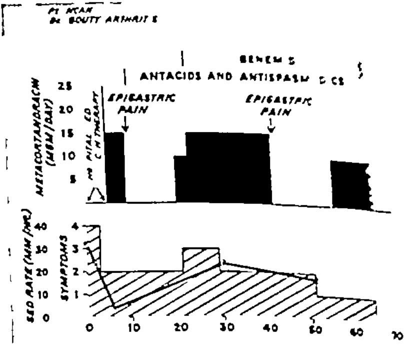
LUPUS ERYTHEMATOSIS

NUMBER OF PATIENTS - 3

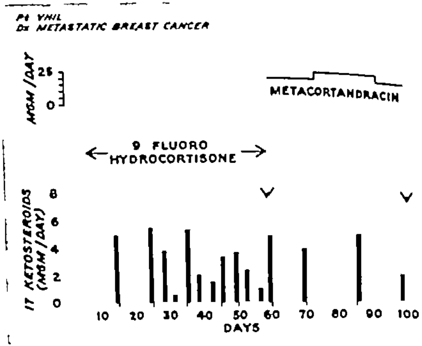
SIDE EFFECTS	CLINICAL CONTROL
NONE — — — — — — — — — 1	GOOD IN ALL 3
EPIGASTRIC PAIN — — — — 2	



Lupus. The net clinical response in these patients, and in three others currently under treatment appears to be excellent. The same statement applies to two patients with dermatomyositis

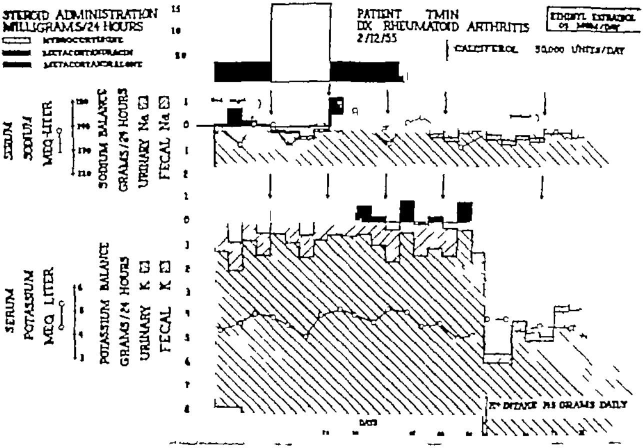


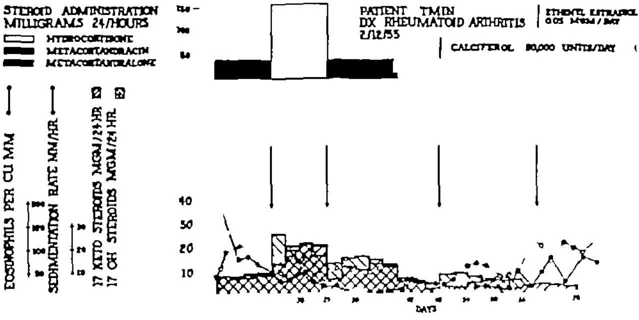
Gout. An excellent anti-inflammatory response was obtained with metacortandracin. An anti-ulcer regimen was necessary for control of gastro-intestinal symptoms.

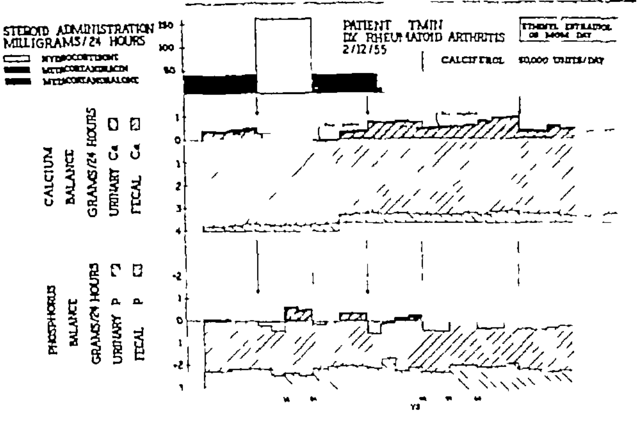


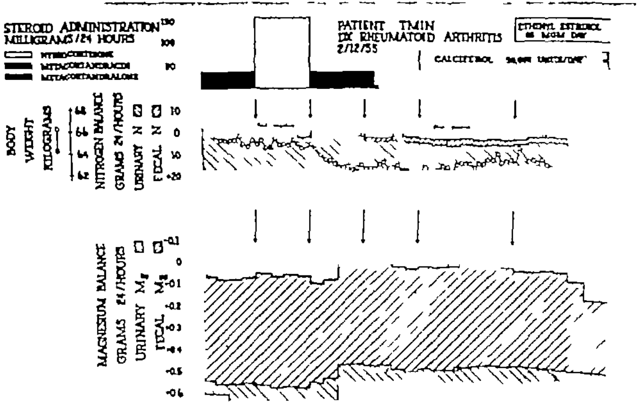
Cancer. Despite the lack of complete adrenal suppression during the period of corticoid administration, there appears to have been no progression of the metastatic process.

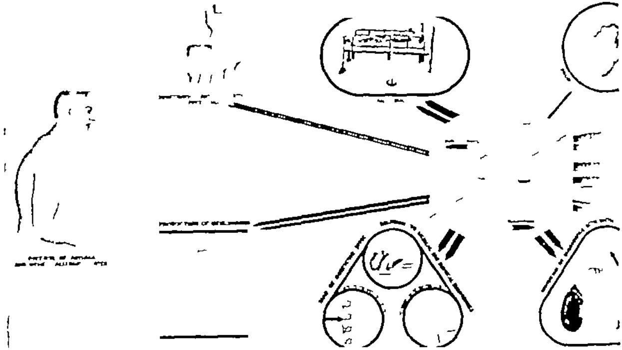
METABOLIC STUDIES

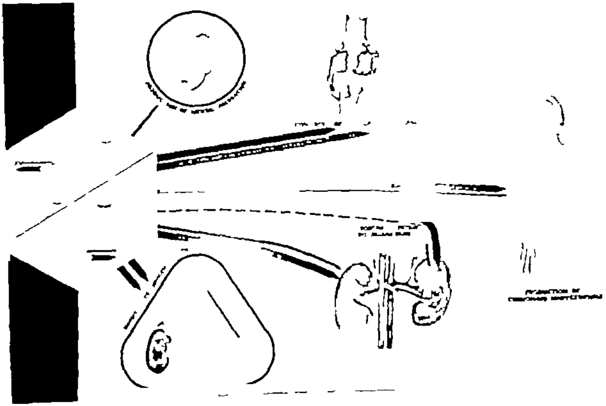


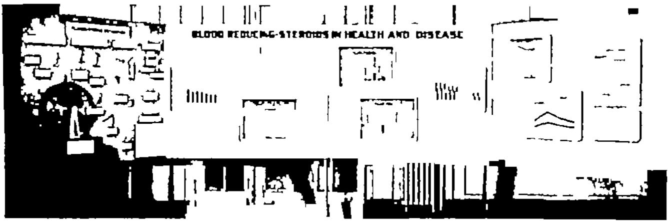



STEROID ADMINISTRATION MILLIGRAMS/24 HOURS
PATIENT TMIN
DX RHEUMATOID ARTHRITIS
2/12/55
CALCIFEROL
CALCIUM BALANCE GRAMS/24 HOURS URINARY Ca FECAL Ca
PHOSPHORUS BALANCE GRAMS/24 HOURS URINARY P FECAL P


STEROID ADMINISTRATION MILLIGRAMS/24 HOURS
PATIENT TMIN
DX RHEUMATOID ARTHRITIS
2/12/55
CALCIFEROL
BODY WEIGHT KILOGRAMS
NITROGEN BALANCE GRAMS 24/HOURS URINARY N FECAL N
MAGNESIUM BALANCE GRAMS 24/HOURS URINARY Mg FECAL Mg



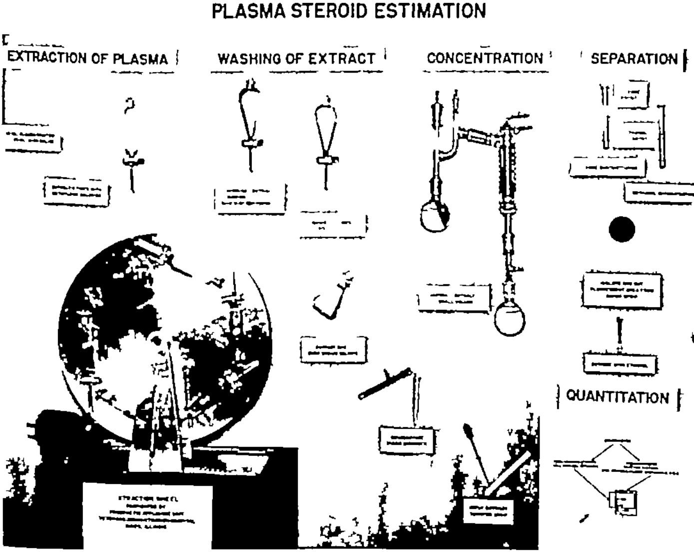

PRODUCTION OF



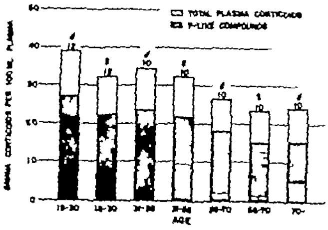
Blood Reducing Steroids in Health and Disease.

SMITH FREEMAN CHARLES INMAN J X. WHEELER, and CHIADAO CHEN Veterans Administration Hospital, Hines, Ill Veterans Administration Research Hospital and Northwestern University Medical School, Chicago.

The exhibit presents information concerning free plasma-reducing steroids derived from the adrenal cortex and relates them to problems of health and disease. Methods of plasma steroid estimation and fractionation are shown. The normal range of plasma corticoid values is given for males and females. The values for a variety of disease states are presented and the effect of corticotropin (ACTH) upon the concentration of total plasma and "F-like" corticoids is shown. Similar data are presented on the effect of ingestion or injection of compounds E and F



TOTAL PLASMA CORTICOIDS AND F-LIKE COMPOUNDS IN HEALTHY SUBJECTS

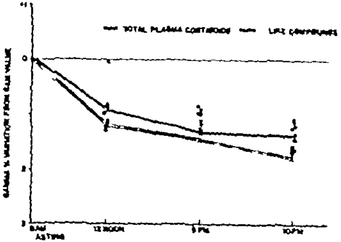


CONSTANCY OF TOTAL PLASMA CORTICOIDS AND F LIKE COMPOUNDS IN HEALTHY SUBJECTS*

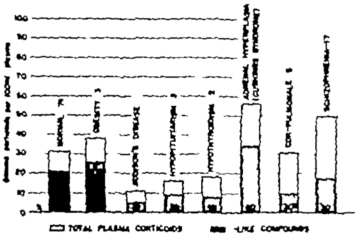
DATE	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OCT. '53	36	23	42	28	44	30	40	28	42	28	39	26
JAN '54	38	25	42	27	43	29	39	27	42	28	38	23
APR '54	35	23	44	29	45	30	38	28	42	27	38	25
JULY '54	36	23	43	28	44	30	39	27	44	29	38	25
OCT '54	38	25	42	28	44	30	40	28	43	28	36	23
JAN '55	37	25	44	29	—		—		—		39	25
Average % F-LIKE	66		66		68		69		66		66	

EXPRESSED IN GAMMA

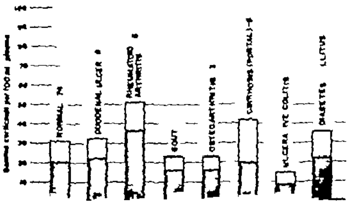
AVERAGE NORMAL DIURNAL VARIATION OF PLASMA CORTICOIDS IN HEALTHY MALE SUBJECTS



TOTAL PLASMA CORTICOIDS AND F-LIKE COMPOUNDS IN DISEASE STATES

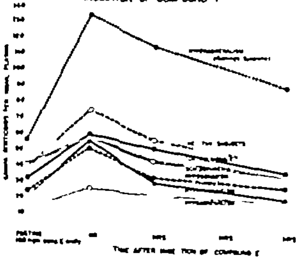


TOTAL PLASMA CORTICOIDS AND F LIKE COMPOUNDS IN DISEASE STATES



PLASMA CORTICOID RESPONSE TO ACTH IN HEALTH AND DISEASE

TOTAL PLASMA CORTICOID RESPONSE FOLLOWING INGESTION OF COMPOUND F



SUMMARY OF EXHIBIT

Practical methods are available for estimating plasma reducing and -like steroids.

Normal plasma steroid values have been established for healthy adult subjects.

3. The normal plasma steroid values for [illegible] given individual are quite constant.

The plasma concentration of steroids is related to adrenal function.

5. Plasma steroid values outside of the normal range have been demonstrated in several disease states.

The response of the adrenal gland to ACTH stimulation can be clearly demonstrated by determination of the plasma steroids.

7. Adrenal stimulation by ACTH is subnormal in [illegible] number of diseases as judged by the plasma steroid response.

8. Estimation of total and F-like steroids on the same plasma has demonstrated [illegible] normal ratio [F-like / Total] of [illegible], while much lower ratios occur in certain diseases.

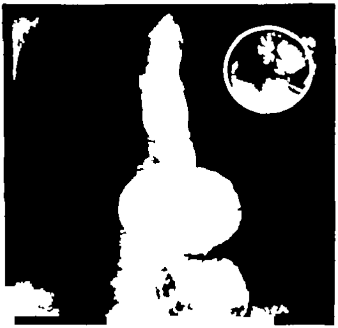
9. The plasma steroid value reaches [illegible] maximum approximately one hour after the ingestion of cortisone or hydrocortisone.

10. Intravenously administered hydrocortisone largely disappears from the circulation after four hours.

DISAPPEARANCE OF INTRAVENOUS COMPOUND F FROM CIRCULATION

Esophagitis Caused by Esophageal Hiatal Hernia in Adults

Displacement of the esophagogastric junction into the thorax causes incompetent cardia allowing regurgitation of gastric secretions Hydrochloric acid and digestive enzymes are responsible for peptic esophagitis Ulcerations of the esophageal mucosa will develop and heal and eventually cicatricial changes will occur The esophagus may shorten and in many cases stricture may be the end result



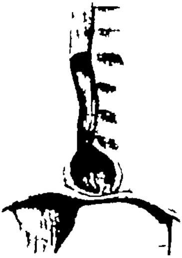
Hiatal Hernia With Ulcerative Esophagitis

A 60-year-old woman with hi tal herni duodenal lcer gall tone nd long tanding dyspepsi Esophagoscopy disclosed severe lcera ti esophagiti Hi t l herni repaired and tomach brought below di phragm

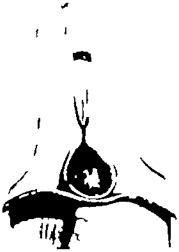
Healed Esophagitis With Cicatrization 3 Years Later

Same patient returned nearly 3 years l ter with compl i t of dysphagi of 1 yea dura tion Esophagiti had healed with marked shortening of the esophagus t icture formation nd result t i trathora ic tomach

Sliding Type of Hiatal Hernia



Incompetence of Cardia Leads to Esophagitis



Healing of Esophagitis Produces Stricture

Esophagitis Caused by Incompetent Cardia in Children

Regurgitant esophagitis may occur in newborn infants Incompetence of the cardia seems to be responsible Some children are born with congenital hiatal hernia; others are born with congenital short esophagus In either case cicatricial changes are common and serious dysphagia is present Early recognition and proper treatment of incompetence of the cardia in children are most important

Congenital Short Esophagus

A congenital short esophagus with tricture t the esophagoga t ic junction i child 1 year of age who had had difficulty i swallowing inc bi th

Esophagitis and Stricture

A 5-yea -old girl wa found t have short sophagus esophagiti nd tri ture Hi tory of regurgit tion when lying down ince ea ly infancy Patient wa observed for 5 year nd the esophagus wa dil ted 30 time

Esophageal Ulcer and Stri ture Secondary t Cardi spasm

[illegible]

Esophageal Ulcer Secondary to Diaphragmati Herni

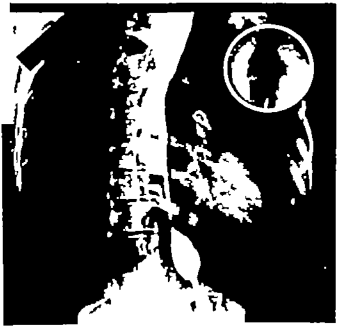
[illegible]

Esophagiti and Carcinoma

[illegible]

Esophagitis Caused by Vomiting

Prolonged vomiting may produce peptic esophagitis with ulceration Inflammation is diffuse throughout the esophagus Resulting strictures are frequently very long and the cicatricial changes often produce a short-esophagus type of hiatal hernia Vomiting of pregnancy vomiting from pyloric or intestinal obstruction and postoperative regurgitation are frequent causes of ulcerative esophagitis



Esophagitis Caused by Vomiting of Pregnancy

A 29-year-old woma experienced ever prolonged vomiting associ ted ith toxemi of pregnancy nd jaundice Severe esophagiti and n longated esophageal tricture ith i tra ther cl tomach developed

Esophagitis Caused by Postoperative Vomiting

A 73-year-old man had obstructing ca inoma f the colon Much vomiting and prolonged na sal tube drainag before oper tion Severe l cerative esophagiti and an longated t i ture with i trathora i tomach developed

Vomiting P es
Diffuse Esoph and
a Long Str

Cardioplasty for Cardiospasm (Wendel technic)
Relieves Obstruction but
Renders the Cardia Incompetent:
Regurgitation Cau es Esophagitis and Ulceration

Esophagitis Resulting From Operations Involving the Cardia

Operative procedures which destroy or bypass the cardiac mechanism result in regurgitation of gastric secretion Esophagitis is a frequent sequela of procedures such as esophagogastrectomy and cardioplasty Alkaline esophagitis may develop after total gastrectomy with either esophagoduodenostomy or esophagojejunostomy

Esophagitis Following Esophagogastrectomy for Carcinoma

A 34-year-old man Dysphagi epi t burning and regurgit tion developed 4 months fter esophagogastrectomy for ca [illegible] of the esophagus Severe esophagiti nd t icture resulted l year l ter

Esophagitis Following Cardioplasty for Cardiospasm

A 34-year-old m He [illegible] hemorrhage nd [illegible] f llowing cardiopl ty (Wendel) performed [illegible]here 10 months previously Esophagoscopy revealed ulcerative esophagiti

Esophagitis Secondary t Duodenal Ulcer

[illegible]

Esophagiti Following Esophagog trectomy

[illegible]

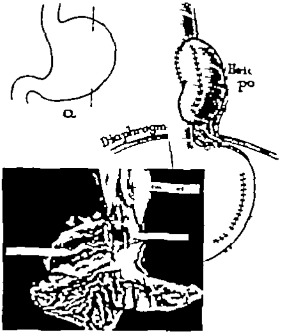
Esophagiti Following Cardiopl sty

[illegible]

Production of Esophagitis by Direct Exposure of Esophagus to Acid Gastric Secr...

Work done in coll beration with H R Ripley F llo...

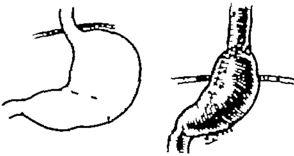
Experimental esophagitis was produced in d... phagus to the acid gastric secretions In one method ... transferred to the esophagus and its secretions ... (Heidenhain pouch) In another method th... by esophago-gastrostomy which permitted ...



Experimental implantation f Heidenhai pouch i t the esophagu f dogs caused sever lcerative esophagiti

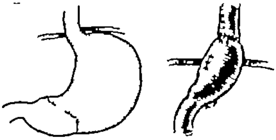
Experimental Esophag...

Work done i coll beration with R T Reed ... yo Foundation



Esophagitis Develops

Esophagiti develops in experimental esoph-gogastrectomy in dogs if some cid secreting po tion of the tomach is llowed t remain



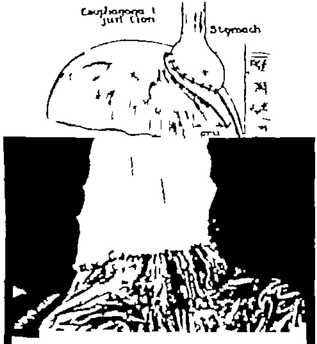
Esophagitis Rarely Develops

Esophagitis rarely develops if ll the id secreting portion of the tomach is re ected and the esophagus is na tomosed t the trum

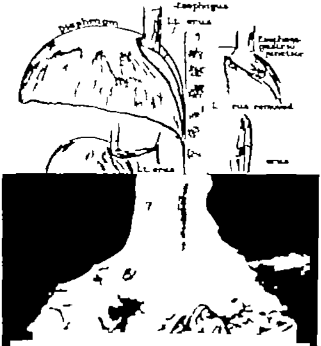
Production of Esophagitis by Interference With the Mechanism of the Diaphragm

Work done in collaboration with V. J. Ojuezzi Jr., Fellow, Mayo Foundation

Intact diaphragm helps maintain competence of the cardia. Incompetence of cardia was produced by two methods. In one set of experiments competence of cardia was destroyed by production of esophageal hiatal hernia and in another set of experiments by removal of the left crus of the diaphragm. In both experiments esophagitis developed in a large number of dogs due to regurgitation of acid gastric contents.



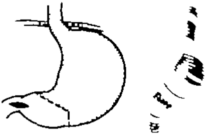
Canine esophagitis resulting from experimentally produced esophageal hiatal hernia showing the inflammatory reaction along the esophagogastric junction and ascending the esophagus in typical linear pattern.



Canine esophagitis resulting from interference with the diaphragmatic pinchcock mechanism by surgical excision of the left crus of the diaphragm.

Types of Drainage Procedures in Conjunction With Esophagogastrectomy and Esophagoantrostomy

Work done in collaboration with H. W. Newman, Fellow, Mayo Foundation

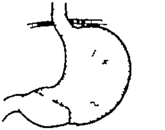


Heineke-Mikulicz Pyloroplasty

When Heineke-Mikulicz pyloroplasty is used for drainage, alkaline regurgitation leads to ulcerative esophagitis.

Gastroenterostomy

When gastroenterostomy is used for drainage, alkaline regurgitation leads to ulcerative esophagitis.

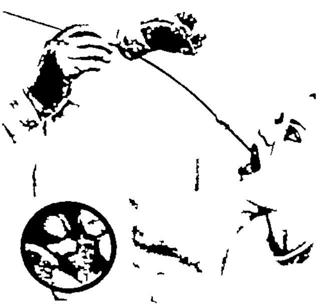


Extramucosal Pyloromyotomy

When extramucosal pyloromyotomy is used for drainage, ulcerative esophagitis due to alkaline regurgitation is minimized.

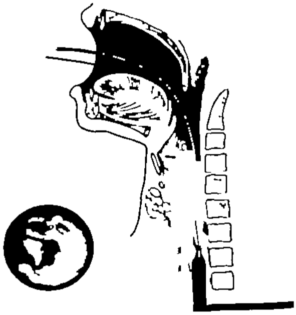
Medical Treatment of Esophagitis and Its Complications

Medical treatment of esophagitis and its complications should include: (1) ulcer diet (2) prevention of regurgitation by (a) elevation of head of bed and (b) reduction of pressure within the abdomen by weight reduction and avoidance of tight garments (3) neutralization of gastric acids by regular use of antacids and (4) dilation of esophageal strictures by mechanical means



Thread Serves as a Guide

Thi method of dil tion utilizes previously swallowed thread Fifteen feet f thread i swallowed t the rat of 12 inches per hour and i engaged i the small bowel



Dilating the Stricture

Pa sage f the wire spiral nd sounds over the thread i complished with the id of flexibl whalebone taff Graduated sound up t 45 French re pa sed through the tri ture

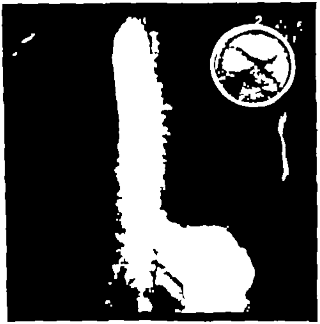
Esophageal Stricture Being Dilated
(See photographs above)

Esophageal Stricture Successfully Treated by Dilation

[illegible]-year-old man [illegible] ure of esophagus caused by [illegible] tion f llowing [illegible] on for [illegible] of the [illegible] left The [illegible] re [illegible] reated successf lly by means of [illegible] d la ions [illegible]

Surgical Treatment of Esophagitis and Its Complications

Esophagitis caused by hiatal hernia is best treated by reduction of the hernia Complications of esophagitis may be successfully treated by (1) extensive esophago-gastrectomy and pyloromyotomy (2) Roux-Y esophagojejunostomy Subtotal gastrectomy transplantation of esophagogastric junction to dome of diaphragm and interposition of a limb of jejunum between stomach and esophagus have also been used



Esophageal Stricture Following Esophagogastrectomy

Patient treated [illegible]where 12 months previously by resection of the cardi[illegible] and esophagogastrectomy for cardiospasm Severe [illegible]lcerative esophagiti[illegible] [illegible]ith [illegible] [illegible]ture developed 6 months l[illegible]ter

Condition Relieved Surgically

Exten[illegible]ive esophagogastrectomy with removal [illegible] [illegible] the stomach down t[illegible] the antrum and an extramucosal pyloromyotomy One yea[illegible] l[illegible]ter patient had gained 40 pounds and wa[illegible] sympto[illegible]

Esophageal Stricture Treated by Esophagojejunostomy

[illegible]

Transplantation of Esophagogastric Junction to the Dome of the Diaphragm

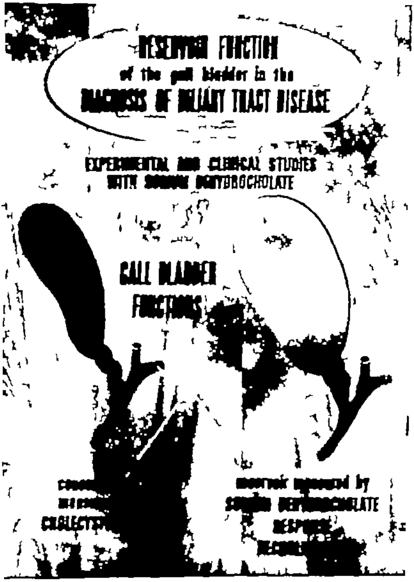
[illegible]

CERTIFICATE OF MERIT

Sodium Dehydrocholate in the Diagnosis of Biliary Tract Disease.

JOSEPH M. GAMBESCIA, ALEXANDER W ULIN CHARLES M. THOMPSON and WILLIAM C. SHOEMAKER, Hahnemann Hospital, Philadelphia.

The exhibit shows (*a*) the experimental work on dogs demonstrating the presence of reservoir function of the normal gallbladder and its loss with the occurrence of acute cholecystitis, (*b*) the clinical application of the principle of reservoir function with the use of sodium dehydrocholate in the diagnosis of biliary tract disease (the results of the test in over 100 patients are presented with representative cases) and (*c*) slide projection that graphically demonstrates the principle and broad technique of the decholin test.



DEMONSTRATION OF RESERVOIR FUNCTION OF THE NORMAL CANINE GALL BLADDER

METHOD

- 8 no mal mo g el dogs s bjected to lapa rotomy
- Gall bladde lume measured directly (ol me = 4 3 î abc)
- Sod m Dehyd ocholate 0 05 Gm Kgm g en Intravenously
- Measurements of gall bladder olume repeated e ery fi e m nutes

Normal histology of ... gall bladder ...

Befo... nd ... sodium dehydrocholate. This ... of f nction.

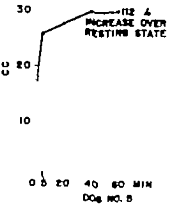
... bladder befo... nd ... min ... f nction

Response of gall bladder volume to Sodium Dehydrocholate Intravenously M asurements in c.c.m. taken directly at laparotomy in eight normal dogs.

Control	Minutes 20	40	60	Vol Increase	
14 5	22 0	23 6	23 6	9 4	65%
18 3	32.9		34 9	16 6	91
13 8	27 0	29 3	29 3	15 5	112%
23 6	39 4	40 7	42 1	18 5	79%
22 1	30 2	36.3	37 4	15 3	69%
13 3	25 8	33 5	36 1	22 8	172%
16 8	44 1	44 1	41.8	27.2	162%
30 4	55 6	56 3	56 8	26 4	84%

Average Volume Before 21.6 c.
After 44.6 cc. (84% increase)

VOLUMETRIC RESPONSE OF GALL BLADDER TO I.V SODIUM DEHYDROCHOLATE



No 6

Five minute response of gall bladder volume to Sodium Dehydrocholate Intravenously Measurements in c.c taken directly at laparotomy
(Three normal dogs.)

Dog	Control	Max. Vol.	5 Min.	% Increase of Max. Vol.
3	13 8	29 3	25 5	76
7	16 8	44 1	38.6	80
8	30 4	56 8	49 8	74

Ave % of Maximum volume increase occurring in first 5 min 77%

SUMMARY

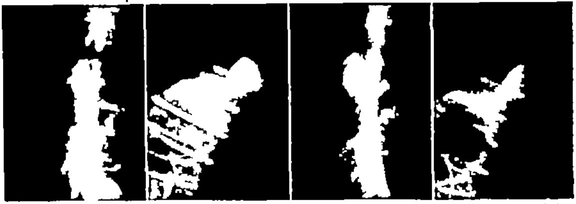
- The reservoir function of the gall bladder can be readily measured in the experimental animal us ng Sod um Dehydrocholate intravenously
- The volume of the normal gall bladder increases markedly after nt aveno s Sod um Dehydrocholate
- Three-fourths of the maxim m e pansion occurs in the first 5 minutes and most of the response occ s w thin 20 min tes

LOSS OF RESERVOIR FUNCTION IN THE CANINE GALL BLADDER FOLLOWING EXPERIMENTAL CHOLECYSTITIS

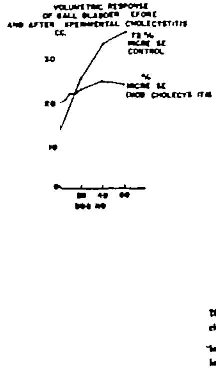
METHOD

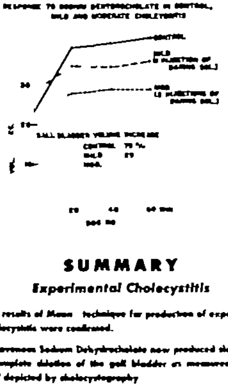
- Production of cholecystitis in the dog using Dakin s Solution g ven intravenously after the technique described by Mann
- Laparotomy and direct measurement of gall bladder volume before and after Sodium Dehydrocholate intravenously

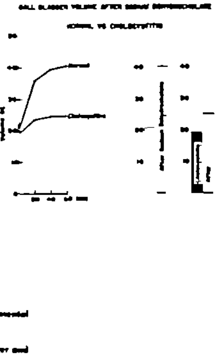
Before and after intravenous sodium dehydrocholate 18 hours following experimental cholecystitis. Increase in volume is impaired. This is loss of reservoir function.



Anteroposterior and lateral cholecystograms of the canine gall bladder before and after intravenous sodium dehydrocholate following experimental cholecystitis. This is loss of reservoir function.







SUMMARY

Experimental Cholecystitis

The results of Mann technique for production of experimental cholecystitis were confirmed.

Intravenous Sodium Dehydrocholate now produced slower and incomplete dilation of the gall bladder as measured directly and depicted by cholecystography

With increased degrees of experimental cholecystitis, the reservoir function of the gall bladder became progressively less

Mild degrees of experimental cholecystitis were reflected in diminished reservoir function, but still visualized normally with cholecystography

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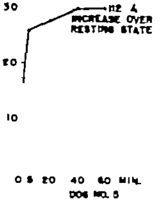

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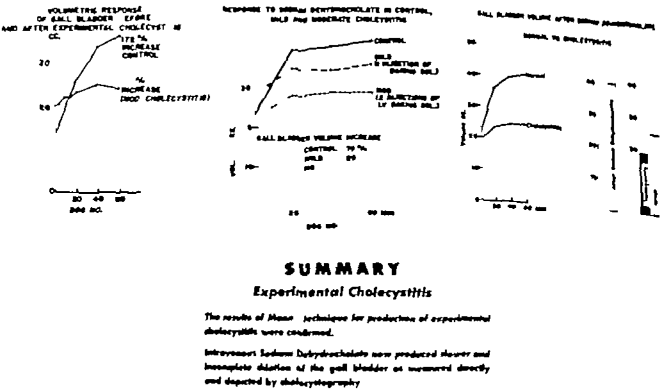

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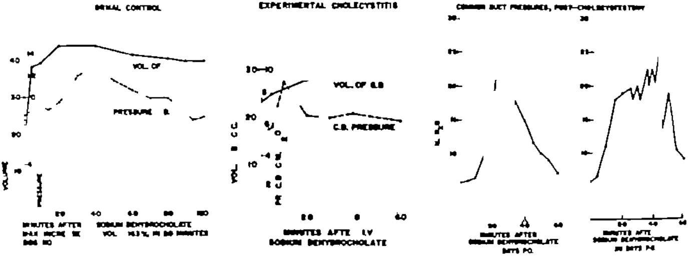
HYDRODYNAMIC STUDIES OF THE COMMON DUCT IN THE DOG

METHOD

- Gall bladder volume measured at laparotomy
- Common duct cannulated and pressures recorded
- Sodium Dehydrocholate given intravenously and measurements repeated before and after experimental cholecystitis and post-cholecystectomy



SUMMARY Measu emen of ommon d pressu es eflec he presence or bsence of the eservoi f nction of he ca ne g ll bladder

PRINCIPLES AND TECHNIQUE

in determining reservoir function of the gall bladder

by use of sodium dehydrocholate

(1)

THE NORMAL GALL BLADDER FUNCTIONS AS

1) A CONCENTRATOR OF BILE

2) A <u>RESERVOIR</u> FOR BILE

(3)

CONCENTRATING FUNCTION DEPENDS ON A NORMAL MUCOSA WHICH ABSORBS WATER AND OTHER ELEMENTS

(4)

RESERVOIR FUNCTION DEPENDS ON A NORMALLY DISTENSIBLE AND ELASTIC GALL BLADDER WALL

(5)

THE DECHOLIN TEST DEPENDS UPON THE MEASURABLE EFFECT OF A HYDROCHOLERETIC AGENT THE STRONGEST HYDROCHOLERETIC AGENT IS SODIUM DEHYDROCHOLATE AN OXIDIZED BILE SALT

(6)

A HYDROCHOLERETIC AGENT INCREASES THE FLOW OF HEPATIC BILE THROUGH THE EXTRAHEPATIC DUCTAL SYSTEM

(7)

UNDER ADEQUATE STIMULATION THE LIVER ACCOMPLISHES HYDROCHOLERESIS BY THE ADDITION OF WATER (HYDRO-) TO THE SECRETION OF BILE (-CHOLERESIS).

(8)

THE NORMAL GALL BLADDER RECEIVES AND STORES HEPATIC BILE (THE RESERVOIR) IT WILL ALSO STORE THE BILE SECRETED BY HYDROCHOLERESIS

(9)

IN THE NEXT PICTURE NOTE THE MARKED INCREASE IN THE SIZE OF THE NORMAL GALL BLADDER 20 MINUTES AFTER INTRAVENOUS SODIUM DEHYDROCHOLATE. THIS IS RESERVOIR FUNCTION.

(11)

WITH A DISEASED WALL THE GALL BLADDER IS UNABLE TO DISTEND UNABLE TO ACCEPT THE SUDDEN INCREASED AMOUNT OF BILE DELIVERED BY HYDROCHOLERESIS

(12)

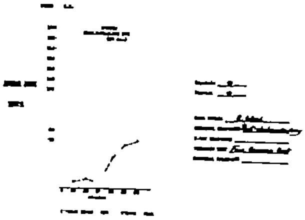
IN THE NEXT PICTURE NOTE THE LACK OF INCREASED SIZE AFTER INTRAVENOUS SODIUM DEHYDROCHOLATE. THIS IS LOSS OF RESERVOIR FUNCTION (EXPERIMENTAL CHOLECYSTITIS)

(14)

WHEN RESERVOIR FUNCTION IS LOST HYDROCHOLERESIS IS ACCOMPANIED BY AN INCREASED AMOUNT OF BILE APPEARING IN THE DUODENUM

(15)

IN THE NEXT PICTURE NOTE THE INCREASED AMOUNT OF BILE APPEARING IN THE DUODENUM AFTER INTRAVENOUS SODIUM DEHYDROCHOLATE WHEN RESERVOIR FUNCTION IS LOST

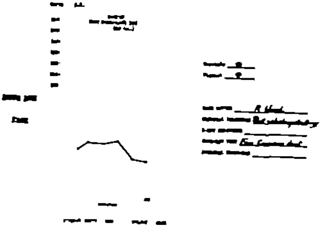


(17)

IF THE PIGMENT CONTENT OF THE DUODENAL ASPIRATE IS MEASURED IT WILL BE SEEN TO DECREASE. THIS IS AN EXPRESSION OF HYDROCHOLERESIS. PIGMENT CONCENTRATION IS MEASURED BY DETERMINING THE ICTERUS INDEX OF THE DUODENAL ASPIRATE

(19)

IN THE NEXT PICTURE NOTE THE FALL OF THE PIGMENT CONTENT OF THE DUODENAL ASPIRATE FOLLOWING INTRAVENOUS SODIUM DEHYDROCHOLATE ---

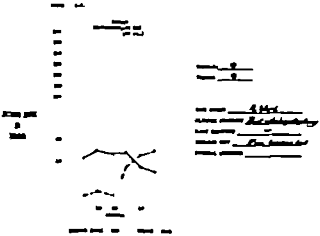


(20)

IF RESERVOIR FUNCTION IS LOST THE DUODENAL ASPIRATE WILL DEMONSTRATE AN INCREASE IN VOLUME AND A CREASE IN BILIARY PIGMENT AS MEASURED BY THE ICTERUS INDEX OF THE ASPIRATE

(21)

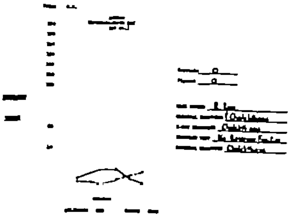
IN THE NEXT PICTURE NOTE THE RISE IN VOLUME AND THE FALL IN THE BILIARY PIGMENT THIS PATIENT HAD BEEN CHOLECYSTECTOMIZED (LOSS OF RESERVOIR FUNCTION).



THE NEXT PICTURE WILL SHOW A VISUALIZED GALL BLADDER WITH CALCULI. THE CONCENTRATING FUNCTION IS PRESERVED

(24)

THE NEXT PICTURE DEMONSTRATES THE SODIUM DEHYDROCHOLATE RESPONSE IN THE SAME PATIENT RESERVOIR FUNCTION IS LOST ALTHOUGH CONCENTRATING FUNCTION IS PRESENT



(26)

THE TECHNIQUE

1) 12 HOUR FAST

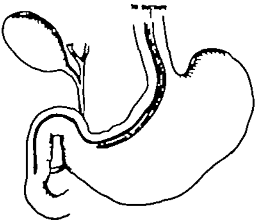
2) A DOUBLE LUMEN TUBE IS USED, THIS PROVIDES CONSTANT GASTRIC SUCTION AND PREVENTS CONTAMINATION OF DUODENAL ASPIRATE

3) THE TUBE IS PASSED INTO THE DUODENUM.

4) FLUOROSCOPIC CONTROL IS DESIRABLE, THOUGH NOT NECESSARY —

5) THE DUODENAL ASPIRATE IS COLLECTED FOR THREE 10-MINUTE INTERVALS BEFORE AND AFTER THE INTRAVENOUS ADMINISTRATION OF DECHOLIN SODIUM.

6) THE VOLUME AND THE BILIARY PIGMENT CONTENT OF EACH ASPIRATE IS DETERMINED AND PLOTTED



RESERVOIR FUNCTION

present

CONCENTRATING FUNCTION

present

CASE M.T —42 W F

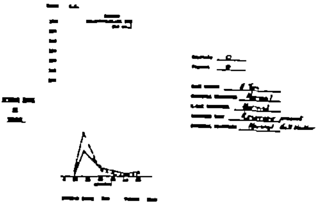
Epigastric Pa f Two Mo ths

No Jau dice

Exami ation Norm l

Diagnoses: Cholelithiasis?

Esophagospasm?

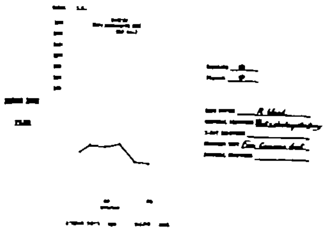


NOTE:

- There is a parallel decrease i the volume and icterus index of the duodenal aspirate
- The sphincter of Oddi acts as a physiologic obstruction
- If cholelithiasis was present hydrocholeresis would be followed by an increase in volume and a decrease in the icterus inde of the duodenal aspirate

(19)

IN THE NEXT PICTURE NOTE THE FALL OF THE PIGMENT CONTENT OF THE DUODENAL ASPIRATE FOLLOWING INTRAVENOUS SODIUM DEHYDROCHOLATE ---



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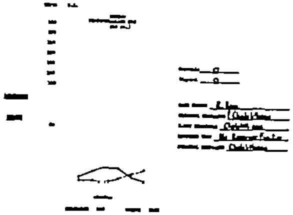

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1) 12 HOUR FAST

2) A DOUBLE LUMEN TUBE IS USED THIS PROVIDES CONSTANT GASTRIC SUCTION AND PREVENTS CONTAMINATION OF DUODENAL ASPIRATE

RESERVOIR FUNCTION

(Post cholecystectomy)

absent

COMMON DUCT

free

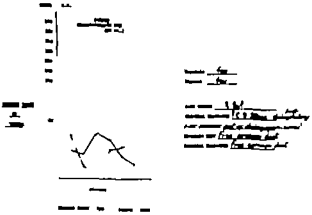
CASE R.A.—33 W F

Cholecystectomy four years previous for cholelithiasis

Recurrent Right Upper Quadrant pain

No jaundice

Diagnoses: Common Duct Stone? Functional?



NOTE

- *Absent gall bladder means loss of reservoir* function
- Increase in volume and decrease in icterus index of duodenal aspirate supports lack of remarkable common duct obstruction
- An occasional cholesterol crystal and occasional clump of pigment does not mean biliary calculi are present

RESERVOIR FUNCTION

(Post cholecystectomy)

absent

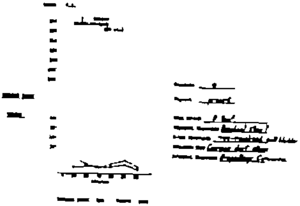
COMMON DUCT

obstructed

CASE A.H.—59 W F

Two months post cholecystectomy for cholelithiasis—admitted with onset of jaundice

Diagnoses: Common Duct Stone? Serum Hepatitis?



NOTE:

- If this was hepatitis post-cholecystectomy (reservoi lost) an increase in icterus index and decrease in volume would be expected.
- The lack of increased volume after sodium dehydrocholate infers significant common duct obstruction

RESERVOIR FUNCTION

(Post-cholecy stomy)

absent

COMMON DUCT

obstructed

CASE F H.—64 W F

Cholecystectomy for cholelithiasis at age 63

Recurrent right upper quadrant pain

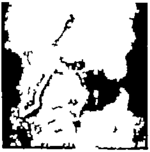
Surgical exploration—No calculi

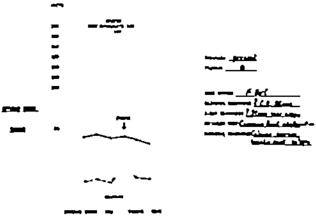
Post-operative cholangiogram—Possible calcul

Diagnoses: Common Duct Stone?

Functional?

Pancreatitis?





NOTE:

- Absence of e pected response post-cholecystectomy
- Drop in volume at t me pain occurred in one st nce
- T st d noted obstructio in sp te of non reveal g surgical e plorat on
- At aut psy choledoch l thiasi d monstrated (death d to myoca d al far tion)

SUMMARY

of

CLINICAL STUDIES

using the

SODIUM DEHYDROCHOLATE

RESPONSE

	PROVEN [illegible]	SUBSTANTIATED [illegible]
Number of patients studied	33	36
Number with reservoir function	6	31 (3)
Number with loss of reservoir function	16 (2)	13 (1)
Number with common duct obstruction	7	1 [illegible]
Number with free common duct post-cholecystectomy	5	8
Number with obstructed common duct [illegible]	4 (1)	3 (1) 2 [illegible]

Total Number of Tests in Proven and Substantiated Cases	94
Number with Correct Diagnosis	86
Number with Error in Diagnosis	8
Percentage of Accuracy	91 %

ADVANTAGES

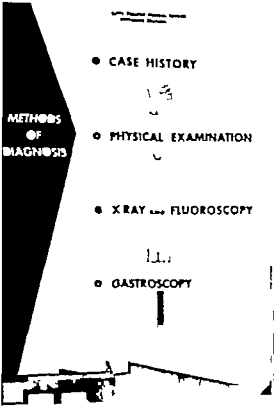
- Simplicity of technical procedures
- No drug sensitivity
- Can be used in presence of jaundice—especially valuable post-cholecystectomy
- Supportive evidence with doubtful or negative roentgen studies

DISADVANTAGES

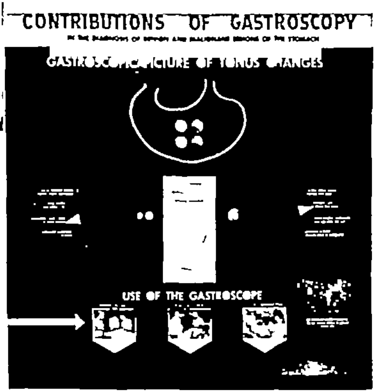
- Time consuming (three hours)
- Inconvenience to patient
- In presence of jaundice status of the gall bladder must be known or inferable
- Icterus index non-specific measure of biliary pigment (duodenal bilirubin determinations preferable)
- The sudden appearance of concentrated bile in the aspirate usually invalidates interpretation

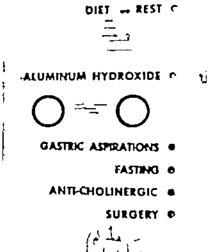
The Value of Gastroscopy in the Diagnosis of Stomach Lesions.

EMMANUEL DEUTSCH, Tufts College Medical School, Boston, and DANIEL L. SHAW JR., Philadelphia.



Gastroscopic observation of the presence or absence of changes in the smooth muscle layers of the stomach can help in distinguishing benign and malignant ulceration of the stomach. The changes that occur in the contour of the stomach follow the variation in contraction and relaxation of the smooth muscle layers of the gastric wall. Observation of peristaltic waves and segmental tonus changes of the stomach is of considerable value. Exfoliative cytology is obtained by scraping under direct gastroscopic vision using a polyethylene tube, after which the desquamated mucosa and muscularis mucosae is aspirated and quickly prepared for cell block, then examined microscopically. Gastric biopsy and specimens obtained under gastroscopic observation can be examined for definitive diagnosis.





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NOTE:

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- Drop vol me at t me pain occurred in one st nce
- Test d noted obstruction in pt of non reveal g surgical e plor tion
- At o t psy choledoch l thiasis demonst ated (d ath due to my ca d al for tion)

SUMMARY

of

CLINICAL STUDIES

using the

SODIUM DEHYDROCHOLATE RESPONSE

	PROVEN (Autopsy or Surgery)	SUBSTANTIATED
Number of patients studied	38	56
Number with reservoir function	6	31 (3)
Number with loss of reservoir function	16 (2)	13 (1)
Number with common duct obstruction	7	1 refused surgery
Number with free common duct post-cholecystectomy	5	6
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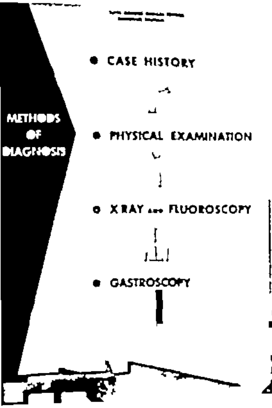

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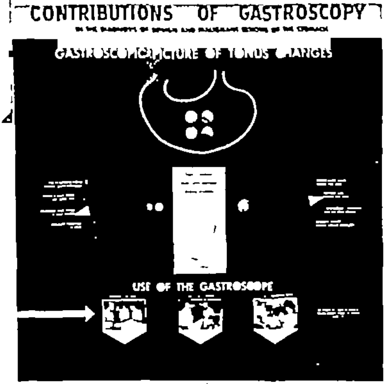
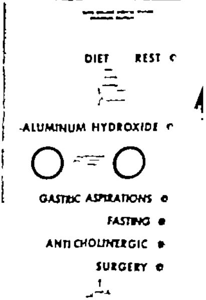




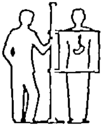
TUFTS COLLEGE MEDICAL SCHOOL
EMMANUEL DEUTSCH, M D

METHODS OF DIAGNOSIS

- CASE HISTORY

- PHYSICAL EXAMINATION

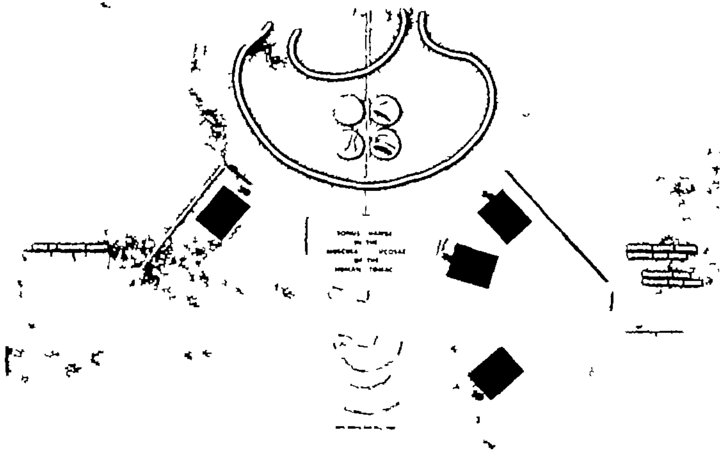
- X-RAY AND FLUOROSCOPY

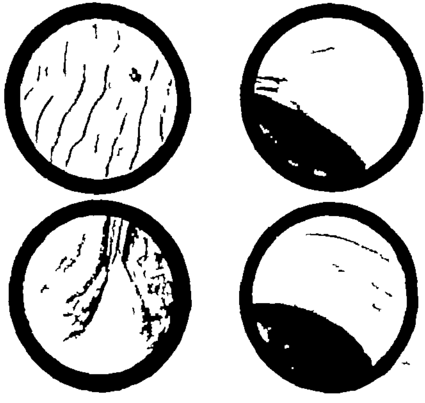


- GASTROSCOPY

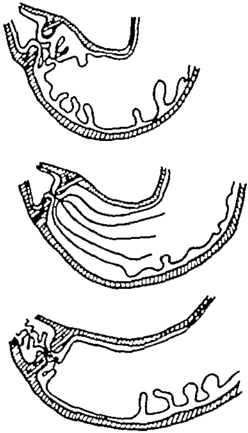
CONTRIBUTIONS OF GASTROSCO

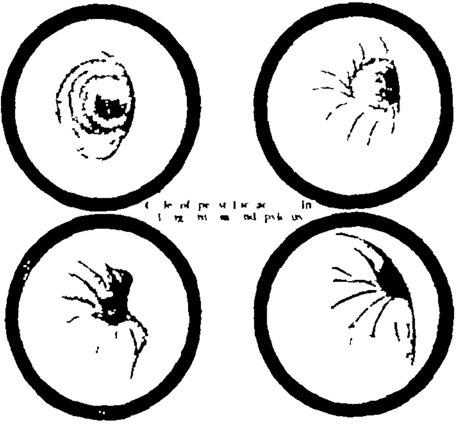
IN THE DIAGNOSIS OF BENIGN AND MALIGNANT LESIONS OF THE STOMACH

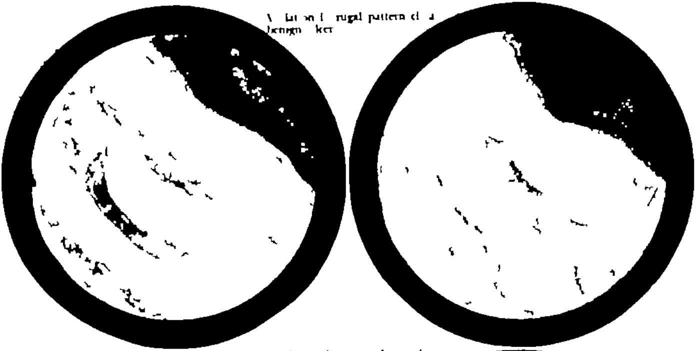




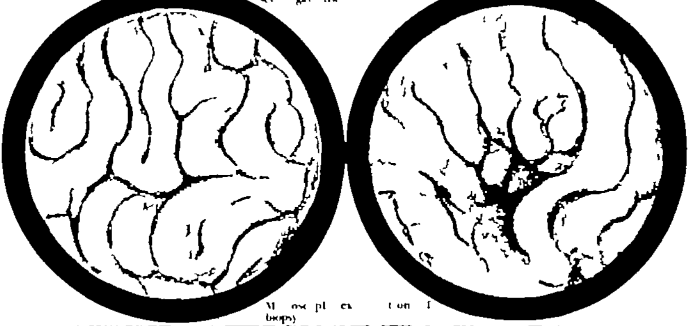
TONUS CHANGES IN THE MUSCULARIS MUCOSAE OF THE HUMAN STOMACH







V lat on l rugal pattern cl a benign ker

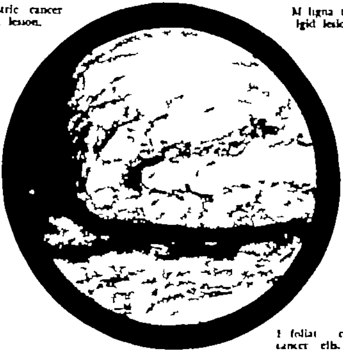


Pseudo pouch t mus bange l sev gas tis

M ose pl ex t on l biopsy

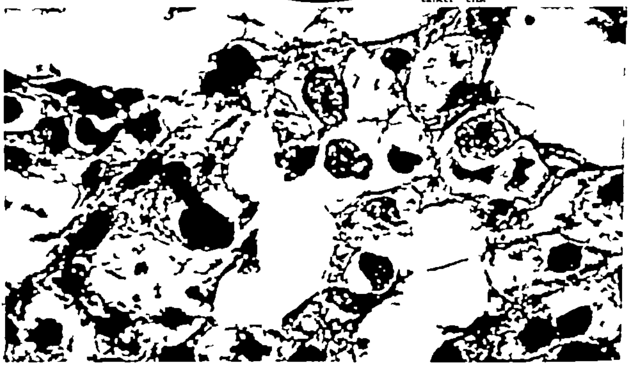
P l poid gastric cancer showing rigid lesion.

M ligna t lcer showing igid lesion.



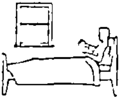
L mphosa coma.

I foliat cytology show ng sheets of cancer elb.

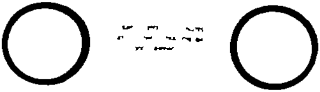


USE OF THE GASTROSCOPE

DIET AND REST



ALUMINUM HYDROXIDE

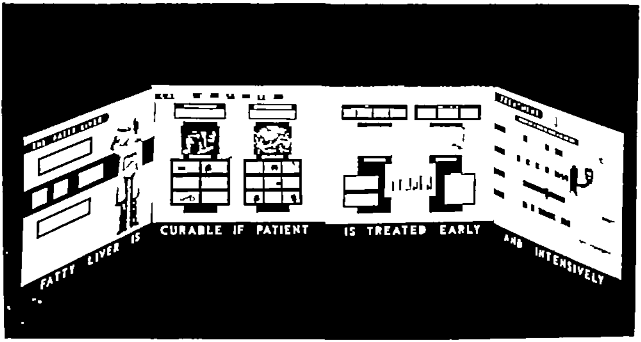


GASTRIC ASPIRATIONS

FASTING

ANTI CHOLINERGIC

SURGERY

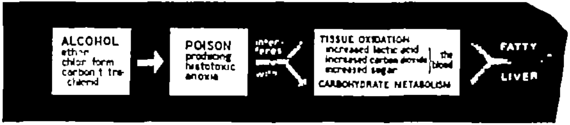


Fatty Livers with Jaundice: Clinical and Therapeutic Considerations.

FREDERICK STEIGMANN Hektoen Institute of Cook County Hospital and University of Illinois College of Medicine, Chicago

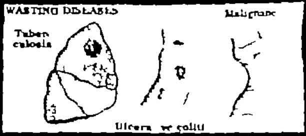
The significant clinical and laboratory findings in chronic alcoholics who have fatty livers complicated by jaundice are demonstrated by graphs, tables, and Kodachromes of liver biopsy and autopsy material. The cholestasis and other signs pointing to an obstructive jaundice are presented and their significance discussed in the differential diagnosis of these cases between medical and surgical jaundice. Lack of signs of medical jaundice is discussed. The great importance of infection or trauma in throwing these asymptomatic cases of fatty liver into a state of toxic hepatitis is depicted. The therapeutic procedures proved of value in this material are presented and their basis discussed.

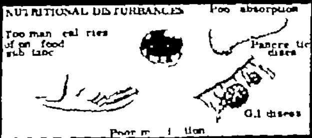
THE FATTY LIVER

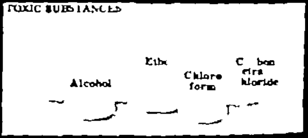


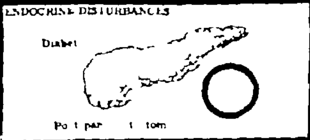
CAUSES OF FATTY LIVER

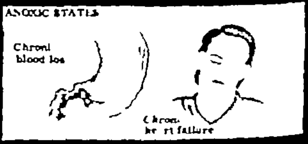
WITHOUT JAUNDICE



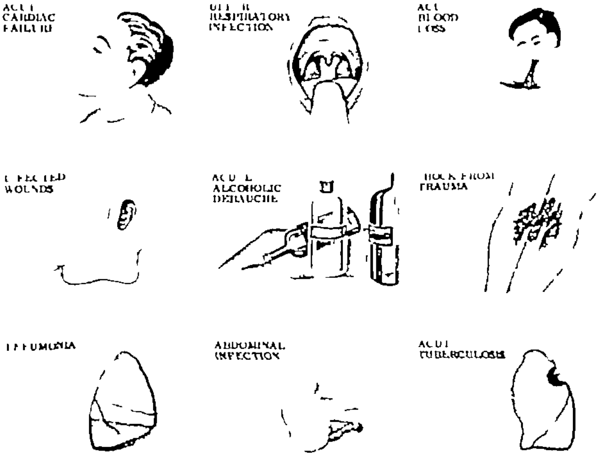


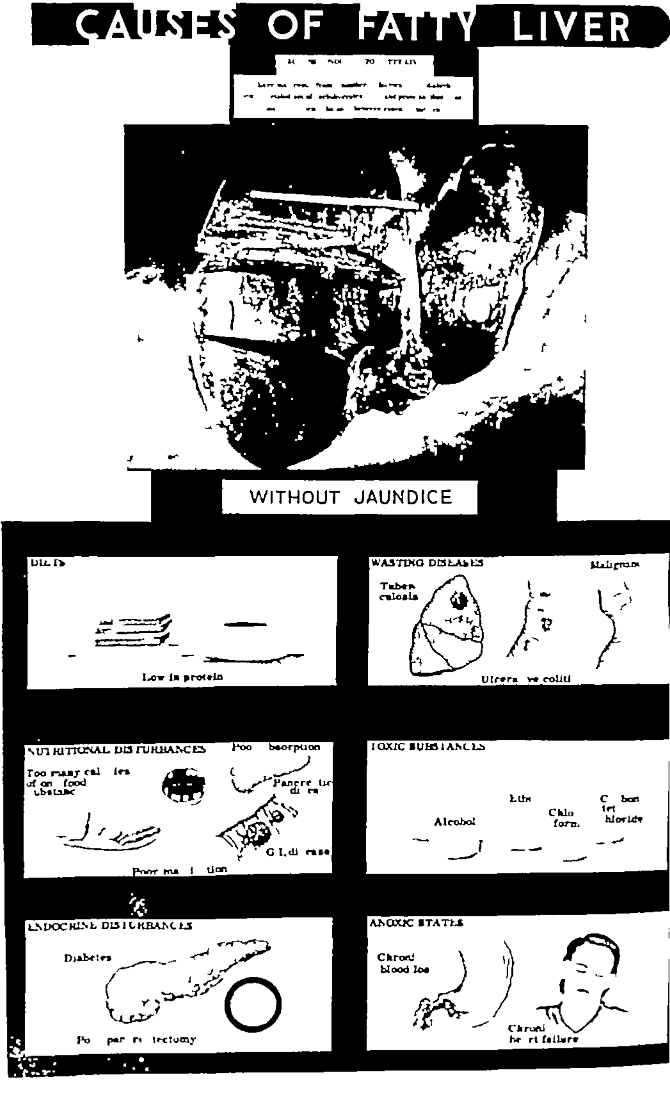




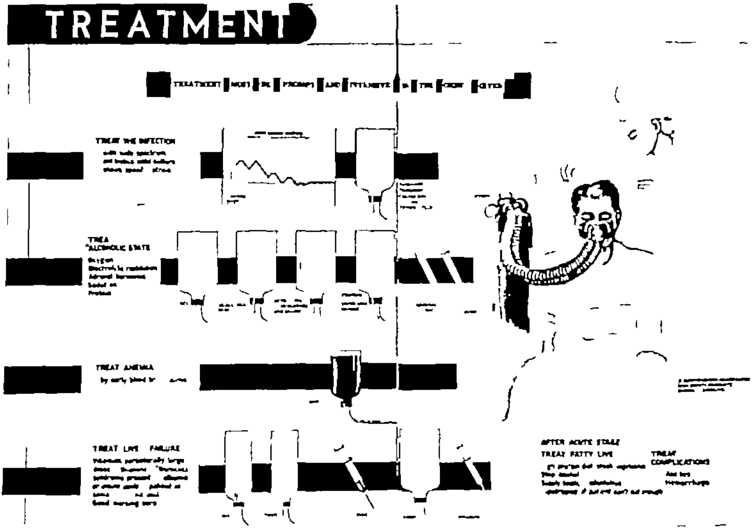


WITH JAUNDICE





CAUSES OF FATTY LIVER
WITHOUT JAUNDICE
Low in protein
WASTING DISEASES
NUTRITIONAL DISTURBANCES
Alcohol
ENDOCRINE DISTURBANCES
Diabetes
ANOXIC STATES



TREATMENT
TREAT THE INFECTION
TREAT ALCOHOLIC STATE
TREAT ANEMIA
TREAT LIVER FAILURE
AFTER ACUTE STAGE
TREAT FATTY LIVER
TREAT COMPLICATIONS

Electronic Analysis of Gastrointestinal Sounds in the Measurement of Gastrointestinal Motility and the Effect of Drugs.

Franz J Ingelfinger, John T Farrar, and Philip Kramer, Boston.

Gastrointestinal sounds will be picked up either from live subjects or from previously recorded tape. The sounds will be displayed on an oscillographic screen and will be fed through an integrator that measures the total energy of sound per unit time. Stethoscopes for listening to the sounds will be available to those desiring to do so. Charts on the wall will demonstrate how the character and total quantity of intestinal sounds correlate with other methods of measuring gastrointestinal motility The exhibit will also demonstrate that the measurement of gastrointestinal sounds is practical, easy and physiological means of assessing the effect of drugs on gastrointestinal motility in the intact human being under normal conditions.

A Composite Approach to Liver Disease.

Thomas J White, Carroll M Leevy Angelo M Gnassi, Martin W Polling, and Felix Traduott Medical Center Jersey City N J

This exhibit presents clinical, biochemical, and anatomic changes of the liver in 500 patients under medical therapy for hepatic disease. A review is made of methods employed in clinical study; results of biochemical function tests; and indications, contraindications, and complications of needle biopsy of the liver The technique used in 2,000 consecutive needle biopsies is demonstrated by moulages. Emphasis is placed on (1) clinical and biochemical findings, (2) microscopic and gross pathology and (3) results of treatment in liver disease due to nutritional deficiency infectious and toxic agents, chronic passive congestion, extra hepatic biliary obstruction, and neoplasms.

The Use of Dihydroxy Aluminum Aminoacetate in Peptic Ulcer

J Alfred Rider, Leo van der Reis, John O Gibbs, Joyce Swader, and Jerome Lee, University of California School of Medicine, San Francisco.

Data on the effectiveness of dihydroxy aluminum aminoacetate on the in vitro and the in vivo neutralization of hydrochloric acid are presented. The clinical results obtained by the use of this agent in the treatment of peptic ulcer are shown.

Nonsurgical Treatment of Perforated Peptic Ulcer

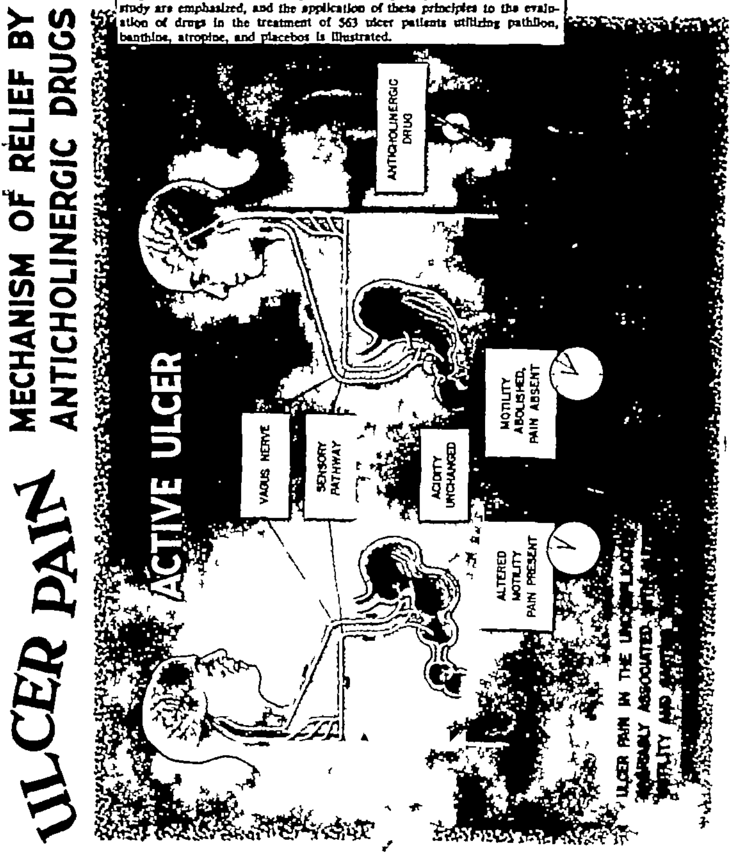
J D. Lane Jr., U S. Public Health Service Hospital, Staten Island, N. Y

A group of charts, drawings, photographs of x-rays, and statistical analysis of 126 cases in support of the effectiveness of the treatment are demonstrated. Visuals show the presence of peritoneal gas in the first instance and the condition of selected patients as treatment progressed.

Evaluation of Drugs in the Treatment of Peptic Ulcer—A Method of Study

JULIAN M RUFFIN Durham, N C. DAVID CAYER, Winston-Salem, N C. JOHN S. ATWATER, Atlanta, Ga. and BENJAMIN OREN Miami, Fla.

The exhibit consists of an explanation of the pathological physiology involved in the production of ulcer pain, the mode of action of the anticholinergic drugs in the relief of pain, and the comparative results of long-term treatment of ulcer patients. The principles of a double-blind study are emphasized, and the application of these principles to the evaluation of drugs in the treatment of 563 ulcer patients utilizing pathilon, banthine, atropine, and placebos is illustrated.



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PRINCIPLES OF STUDY

BECAUSE PEPTIC UL... DISEASE OF SPONTANEOUS RE-MISSIONS AND EXACERBATIO... ...T OF ANY THERAPEUTIC AGENT UPON THE COURSE OF THE ... ...I BE DETERMINED ONLY BY A CONTROLLED STUDY CERTAIN FU...DA...L PRINCIPLES MUST BE FOLLOWED

1 SIMILAR GROUPS

3 IDENTICAL TREATMENT EXCEPT DRUG VS PLACEBO

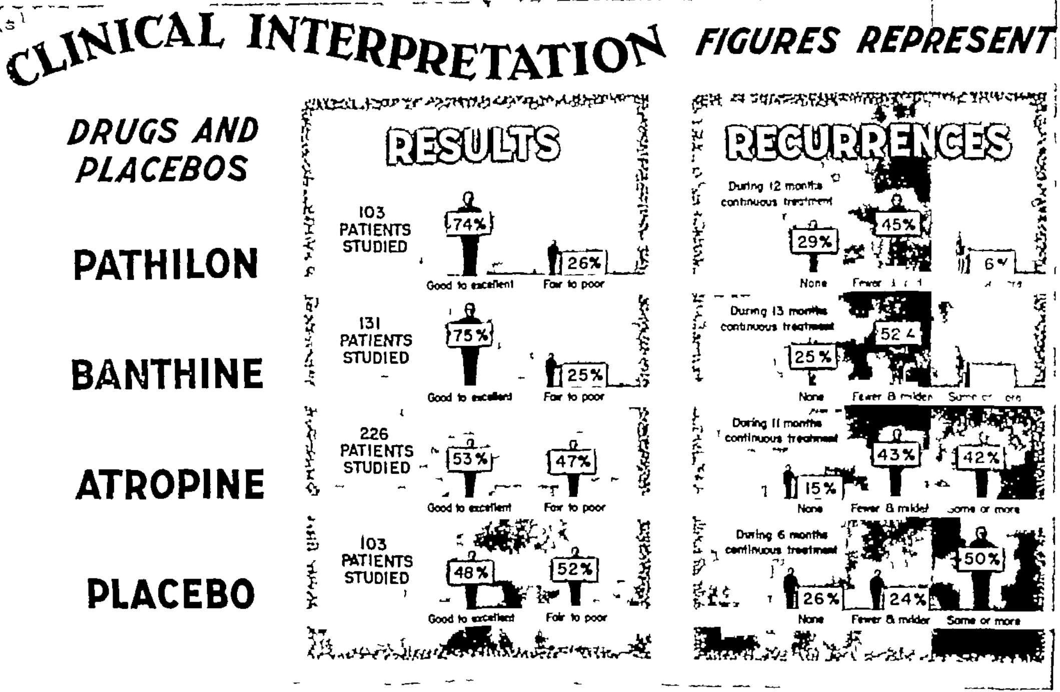
4 DAILY RECORD

5 DOUBLE BLIND STUDY

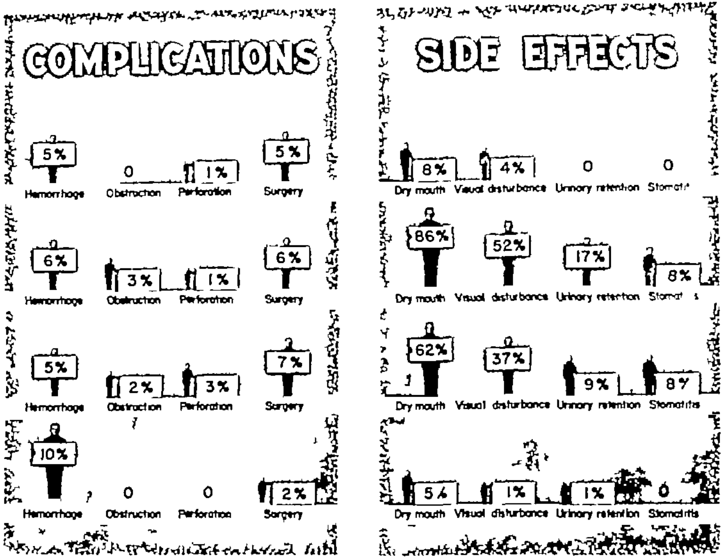
6 ADEQUATE PERIOD OF CONTINUOUS TREATMENT

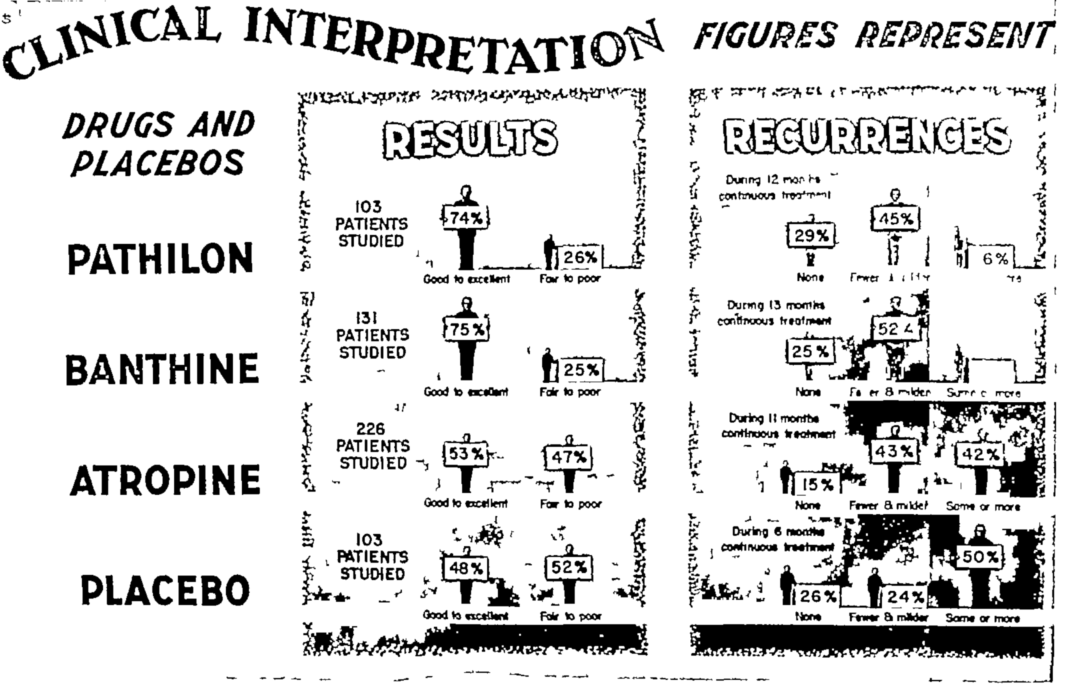
7 STATISTICAL METHODS

SUFFICIENT NUMBERS


CLINICAL INTERPRETATION
FIGURES REPRESENT
DRUGS AND PLACEBOS
RESULTS
RECURRENCES
PATHILON
103 PATIENTS STUDIED
74%
26%
Good to excellent
Fair to poor
During 12 months continuous treatment
29%
45%
None
BANTHINE
131 PATIENTS STUDIED
75%
25%
Good to excellent
Fair to poor
During 13 months continuous treatment
25%
None
ATROPINE
226 PATIENTS STUDIED
53%
47%
Good to excellent
Fair to poor
During 11 months continuous treatment
15%
43%
42%
None
Fewer & milder
PLACEBO
103 PATIENTS STUDIED
48%
52%
Good to excellent
Fair to poor
During 6 months continuous treatment
26%
24%
50%
None
Fewer & milder
Some or more

ANALYSIS OF DAILY RECORD AT END OF STUDY

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During 13 months continuous treatment
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Fair to poor
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24%
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None
Fewer & milder
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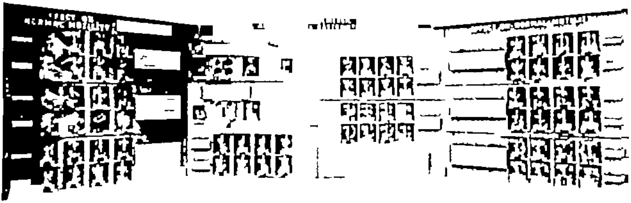


EFFECT OF ANTICHOLINERGIC DRUGS ON NORMAL AND ABNORMAL GASTROINTESTINAL MOTILITY

Wolfgang F Vogel M D Paterson New Jersey

and

G Kenneth Hawkins M D Bloomfield New Jersey

Using the technique of a barium meal X-ray examinations were made before and after administration of various anticholinergic drugs Patients included normal individuals and those with hyperperistalsis, peptic ulcer gastric resection, colon resection and pylorospasm Comparative effect on gastrointestinal motility in each of these conditions is demonstrated by a series of X-rays. Case histories are included

Abnormally prolonged gastric emptying was shortened by use of anticholinergic drugs, while rapid gastric emptying was delayed

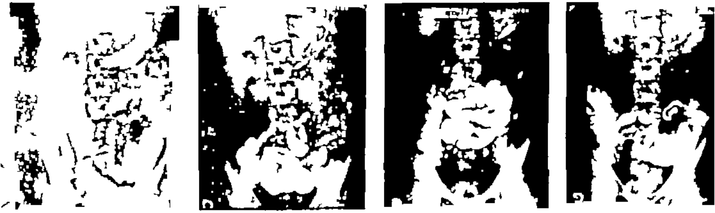
Small intestinal transit time was uniformly prolonged in both normal and abnormal conditions

Shown as scientific exhibit of the Section on Gastroenterology at the 104th Annual Meeting of the American Medical Association Atlantic City June 6-10 1955

EFFECT ON NORMAL MOTILITY

TECHNIQUE One and one-half hours after the oral administration of anti-cholinergic drugs, 8 oz of a standard barium mixture was ingested Serial X-rays were taken and compared with control studies on the same patient without medication

CONTROL



½ hr 1½ hrs. 2½ hrs. 4 hrs.

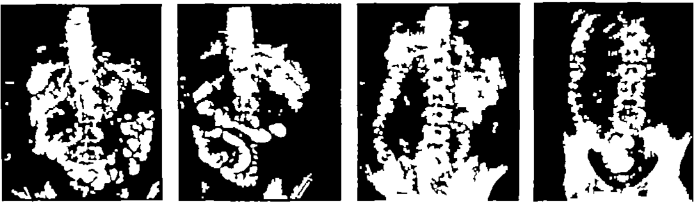
PRANTAL® 200 mg

½ hr 1½ hrs. 2½ hr 4 hrs.

200 mg Prantal resulted in marked delay in gastric emptying and prolonged intestinal transit of barium No side actions

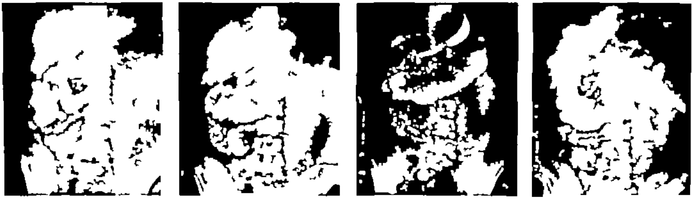
EFFECT ON NORMAL MOTILITY

CONTROL



½ hr | 1½ hrs. | 3 hrs. | 4 hrs.

PRO-BANTHINE® 30 mg



35 min. | 1½ hrs. | 3½ hrs. | 4 hrs.

30 mg of Pro-Banthine® resulted in marked delay in gastric emptying and prolonged intestinal transit of barium.

Minimal to moderate side actions (Dryness of mouth, occasional mydriasis, blurring of vision)

EFFECT ON NORMAL MOTILITY

CONTROL

½ hr

1½ hrs.

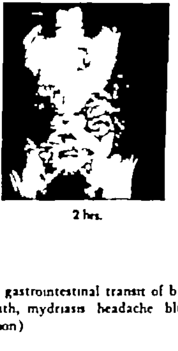
2 hrs.

4 hrs.

SCH 2215 2 mg

hr

1 ½ hrs.



2 hrs.

4 hrs.

2 mg Sch 2215 caused marked delay in gastrointestinal transit of barium
Severe side actions (Dryness of mouth, mydriasis headache blurred vision
severe vertigo and marked mental confusion)

EFFECT ON ABNORMAL MOTILITY

CASE HISTORY 27 year old male with pain in left chest. Normal findings on chest X-ray electrocardiogram and physical examination. Previous history of blow on epigastrium occasional fatty food intolerance

GASTROINTESTINAL SERIES

PYLOROSPASM

PYLORIC CHANNEL ULCER

DELAYED GASTRIC EMPTYING

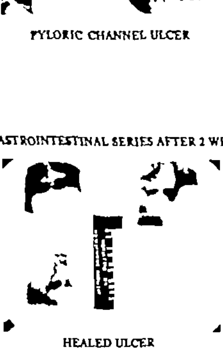
At 5 hours approximately 80% of barium remained in stomach

GALLBLADDER SERIES

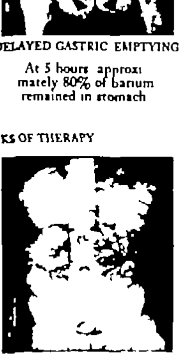
At 18 hours radiopaque Priodax® remained in the stomach The gallbladder was not visualized

REPEAT GASTROINTESTINAL SERIES AFTER 2 WEEKS OF THERAPY

DECREASED SPASM



HEALED ULCER



MORE NORMAL GASTRIC EMPTYING

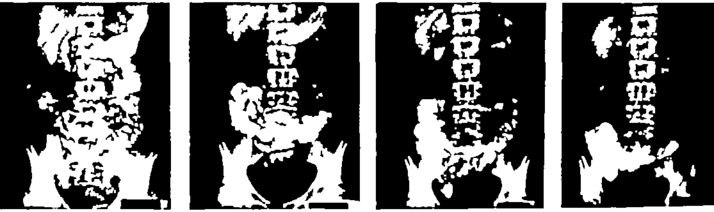
At 5 Hours—Stomach completely empty

THERAPY Dietary restrictions antacids or sedatives were not employed Treatment consisted of Prantal® 100 mg *four times daily for* one week and 200 mg Prantal® four times daily for the second week No side actions occurred Patient was asymptomatic at end of second week

SUMMARY Two weeks of Prantal® therapy resulted in ulcer healing and reduction of pylorospasm Abnormally delayed gastric emptying became accelerated Patient remains asymptomatic 2½ years later

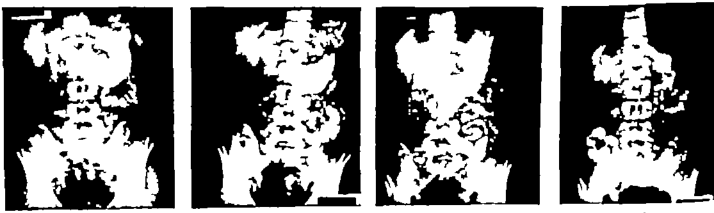
EFFECT ON NORMAL MOTILITY

CONTROL



½ hr | 1½ hrs. | 2 hrs. | 4 hrs.

SCH 2215 2 mg



½ hr | 1 hrs. | 2 hrs. | 4 hrs.

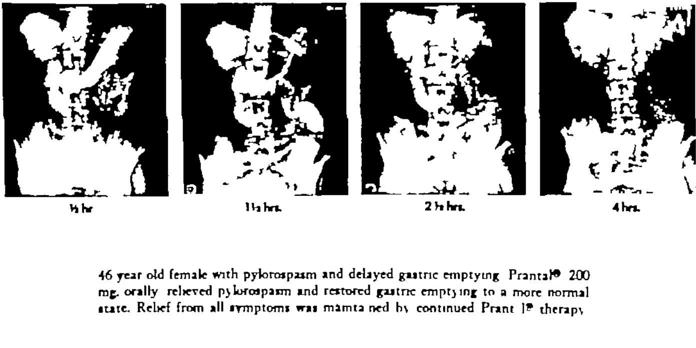
2 mg Sch 2215 caused marked delay in gastrointestinal transit of barium
Severe side actions (Dryness of mouth, mydriasis headache blurred vision severe vertigo and marked mental confusion)

EFFECT ON ABNORMAL MOTILITY

PYLOROSPASM AND GASTRIC RETENTION

½ hr | 1½ hrs. | 2½ hr | 4 hrs.

RETENTION & SPASM RELIEVED WITH 200 mg PRANTAL®

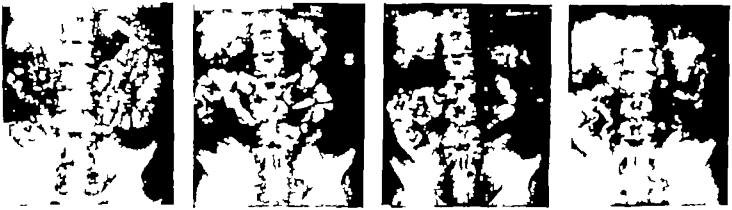


½ hr | 1½ hrs. | 2½ hrs. | 4 hrs.

46 year old female with pylorospasm and delayed gastric emptying. Prantal® 200 mg. orally relieved pylorospasm and restored gastric emptying to a more normal state. Relief from all symptoms was maintained by continued Prantal® therapy.

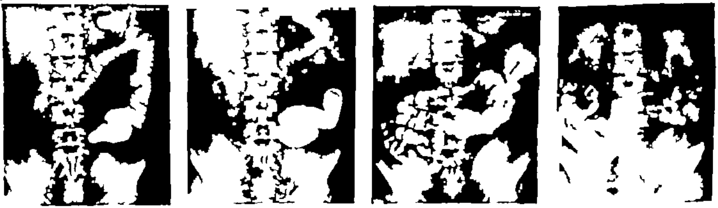
EFFECT ON ABNORMAL MOTILITY

CONTROL



½ hr 1½ hrs. 2½ hr 4 hrs.

TR. BELLADONNA 30 DROPS



½ hr 1½ hrs. 2½ hrs. 4 hrs.

25 year history of chronic duodenal ulcer followed by hemorrhage and gastric resection in 1951
Tincture of Belladonna 30 drops resulted in moderate delay in small intestinal motility

SUMMARY

1. 120 gastrointestinal series were performed on 48 patients using various anticholinergic agents and controls. Representative X-ray series are shown.

2. The barium meal technique presents the most physiologic and standardized approach to the study of gastrointestinal motility. Motility is not affected by instrumentation as in esophagoscopy or by pressure of foreign bodies as ballons, which may alter further the normal variation in motility.

3. Absorption time of various anticholinergic drugs varies and has not been widely studied. This is probably the largest single source of error in studies of this nature.

4. In control studies the majority of normal subjects had gastric emptying between one and 2½ hours after ingestion of barium. Greater variability existed in peptic ulcer patients.

5. Single dosage of Prantal® — 200 mg, Pamine® — 5 mg, and Tincture of Belladonna — 30 drops gave minimal side actions. In our experience with extended Prantal® therapy side actions (if present) are mild and generally not objectionable.

6. Anticholinergic drugs cause decreased tone of gastrointestinal musculature as manifested by delayed gastrointestinal transit of barium and widening of the lumen of the small bowel. Widening of the gastric lumen is suggested but is not conclusive.

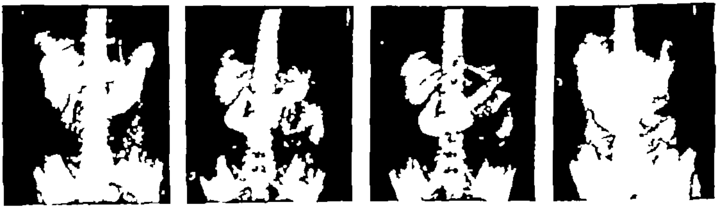
7. Abnormally prolonged gastric emptying was shortened by use of anticholinergic drugs while rapid gastric emptying was delayed. Small intestinal transit time was uniformly prolonged in both normal and abnormal conditions.

EFFECT ON NORMAL MOTILITY

CONTROL

½ hr | 1 hrs. | 2 hrs. | 4 hrs.

BANTHINE® 100 mg



½ hr | 1½ hrs. | 3 hrs. | 4 hrs.

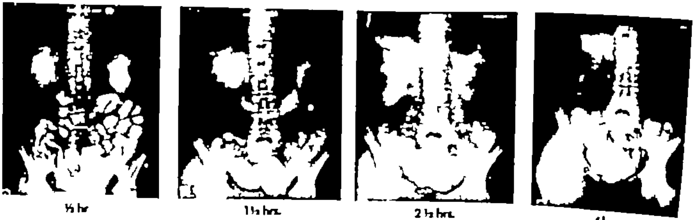
100 mg. Banthine resulted in marked delay in gastrointestinal transit.
Side actions: Moderate (dryness of mouth, headache, mydriasis)

EFFECT ON NORMAL MOTILITY

CONTROL

½ hr 1½ hrs. 2½ hr 4 hrs.

TR BELLADONNA 30 DROPS

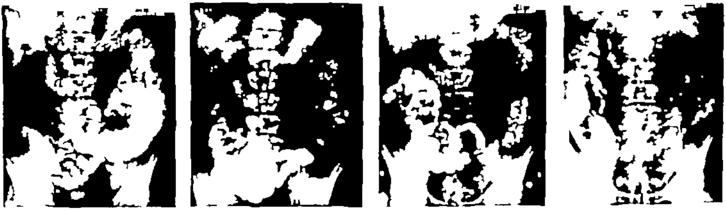


½ hr 1½ hrs. 2½ hrs. 4 hrs.

Single dose of 30 drops of Tincture of Belladonna resulted in moderate delay in gastrointestinal transit.
No side effects.

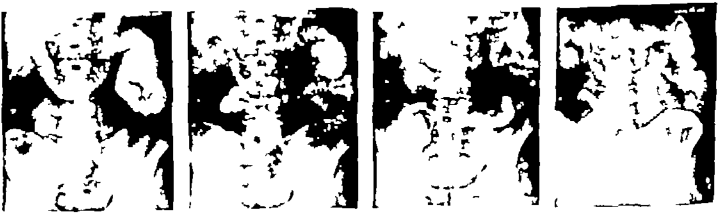
EFFECT ON ABNORMAL MOTILITY

DUODENAL ULCER & PYLOROSPASM WITH GASTRIC RETENTION



½ hr | 1½ hrs. | 2½ hr | 4 hrs.

SPASM RELIEVED WITH 5 mg PAMINE®



½ hr | 1½ hrs. | 2½ hrs. | 4 hrs.

Patient with active duodenal ulcer and pylorospasm 5 mg Pamine resulted in accelerated gastric emptying and delayed intestinal transit of barium
No side actions

Recent Advances in Cytological Techniques.

H. E. NIEBURGS, Cytology Center Beth-El Hospital, Brooklyn, N Y

The science of exfoliative cytology was based on the study of morphological changes in cells following mostly spontaneous exfoliation. The new trend in exfoliative cytology is in the establishment of techniques devised for slight abrasion of surface cells rather than collection of exfoliated cells. A number of instruments devised for this purpose have opened new possibilities for cancer detection in various parts of the body The cells obtained by such methods appear to be better preserved and are easier to identify in regard to their origin and neoplastic change. Results of older methods will be displayed in comparison with the most recent techniques devised for cancer detection. A new device for self-examination and automatic preparation of a smear specimen for the detection of cancer in the cervix uteri will be shown. In addition, a new scanning microscope, constructed for the examination of large numbers of specimens, will be demonstrated.

[illegible]

with a new

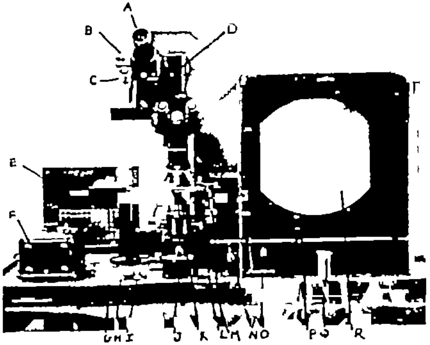
scanning microscope

A new type of semi-automatic microscope has been designed for precision detection of cancer cells in cytological specimens

A smear of the cervix uteri can now be examined in 2 minutes, 10 seconds All measurements can be easily made on the screen for morphological studies Photomicrographs can be secured with the least delay

The facilitated evaluations of cells reduces considerably the training period of technicians

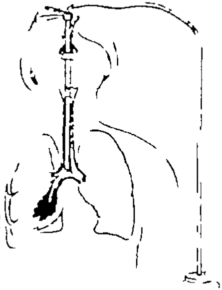
Atypical cells which move across the screen are clearly visible and easily detected for further examination by expert cytopathologists



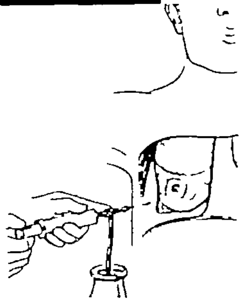
DIAGNOSTIC CYTOLOGICAL TECHNIQUE

LUNG

I per or tion I t le mouth bottle ont ning 70 lcohol



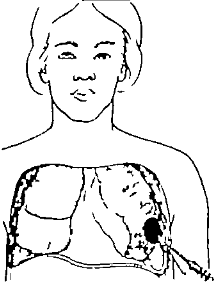
B nchial asp t on t me of I nchoscopy I in eq I olume of 95 lcohol



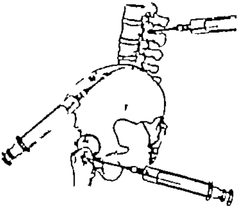
As t on d ple l fluid l sa m I eq I pa t of 40 lcohol or 10 aqueous l t on of formal

ASPIRATION OF BODY TISSUES

PARACENTESIS

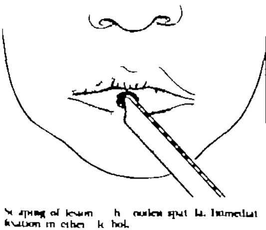


Needle biopsy of lung ca cinoma Speci men is ushed on slide and f ed ther lcohol.



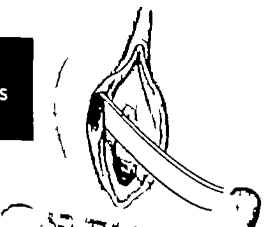
N edle biopsy or aspi ion f om metasta ic bone les ons f sat in ether lcohol

Peritone l flu f or sedi ment should be fixed at o in an equal olume of 40 lcohol or 10 aqueous olution of formalin.



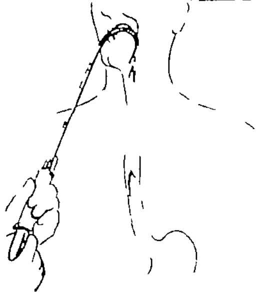
Sc aping of lesion h ooden spat la. Immediat fixation in ether lc hol.

SCRAPING OF SKIN LESIONS



S aping of h lesion r depressor Fixation as l

CYTOLOGIC PROCEDURES
ESOPHAGUS - STOMACH - DUODENUM



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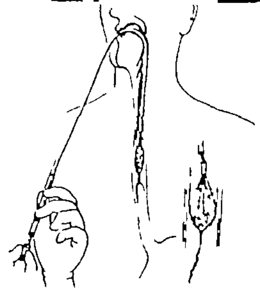
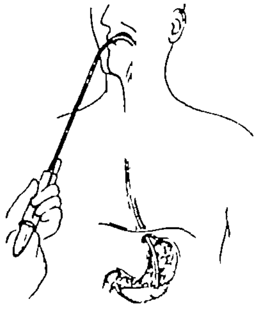


Ab asi nylon bulb (Nlel gs) t site of
d t uct l select specimen.



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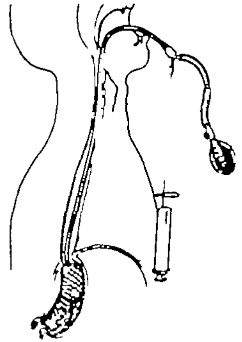

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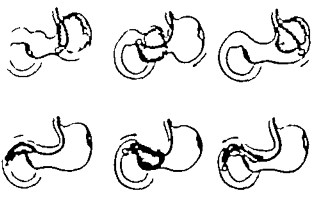

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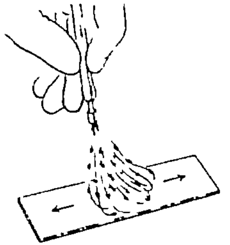

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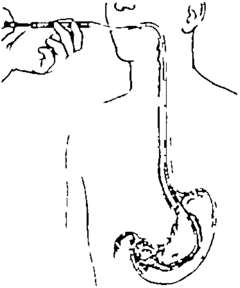
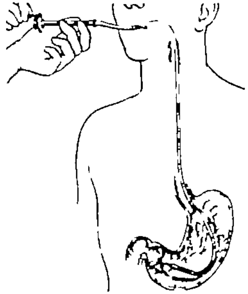
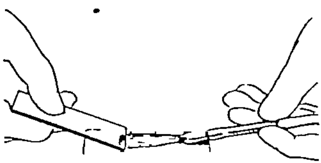


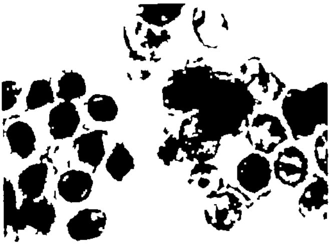
Abras lon bulb (Nichm gs) for selectn g st ic spec men.



Rot ing brush (A)) for sck gast ic specimens.

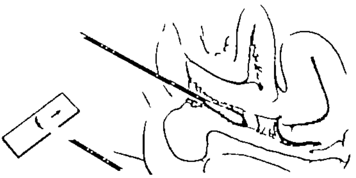


P epa on of smea th otating brusl

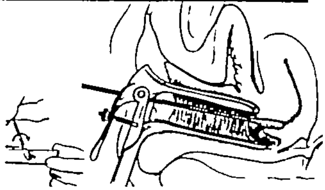


Normal gast ic ells obtained with brast e

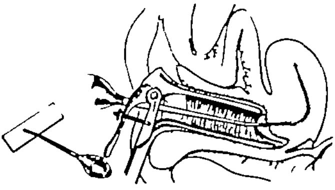
DIAGNOSTIC PROCEDURES
FEMALE GENITAL SYSTEM



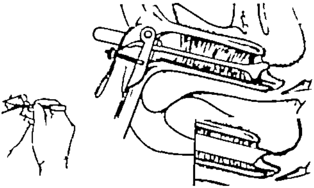
C tton ppl t V g nal s ie



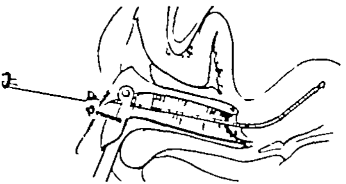
C m ppl m t k l l ll me k k se d t n t ach mpl te t l d l m s pl g



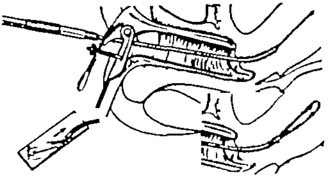
Aspi ion l k l sme



W k spa la (A) Endo l sme



Endometrial spi on



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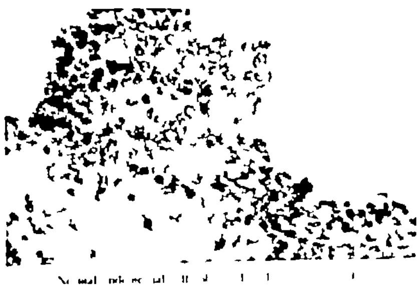

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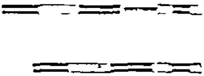
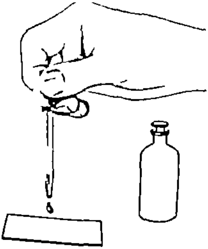


[illegible]

FIXATION AND MAILING OF SLIDES



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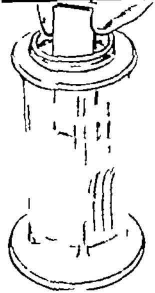

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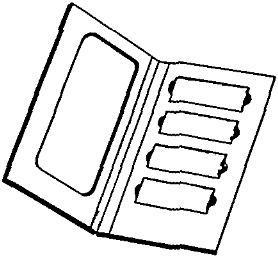

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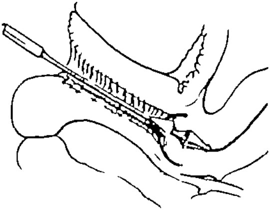
BIOPSY PROCEDURES



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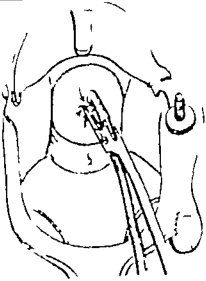

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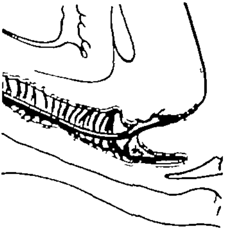

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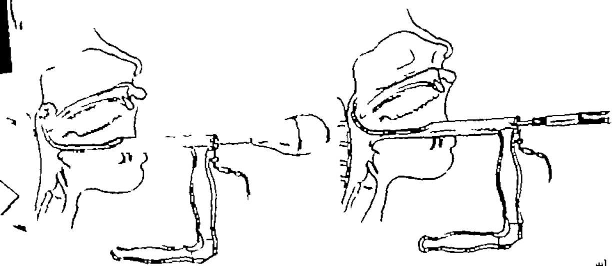
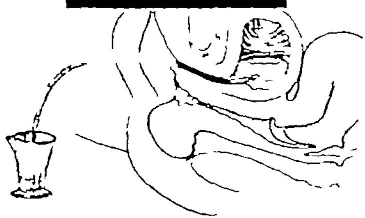
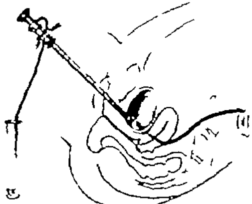


BLADDER

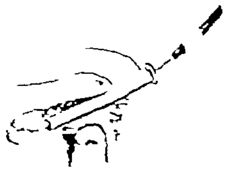


KIDNEY

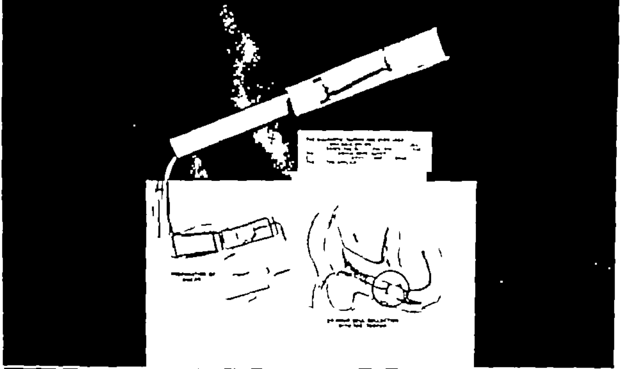


PROSTATE

RECTUM & SIGMOID



CANCER DETECTION TAMPON

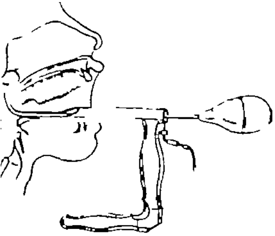


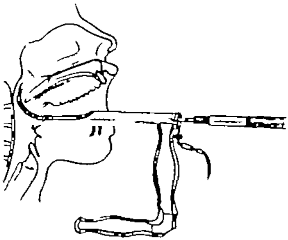
SMEARS PREPARED WITH COTTON APPLICATOR

SMEARS PREPARED WITH DIAGNOSTIC TAMPON

CYTOLOGICAL DIAGNOSTIC METHODS

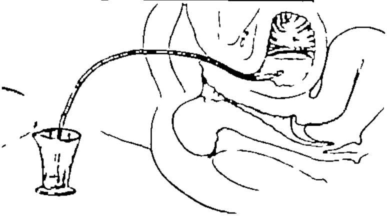
ORAL CAVITY





BREAST

BLADDER



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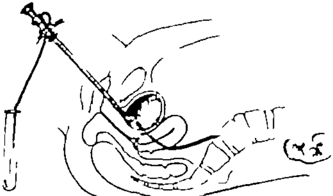

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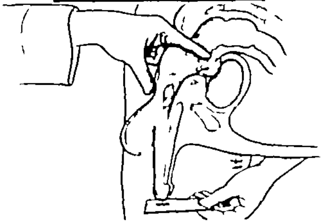
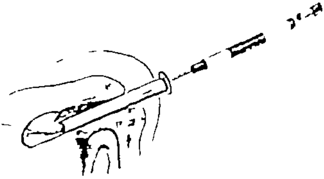


RECTUM & SIGMOID



HONORABLE MENTION

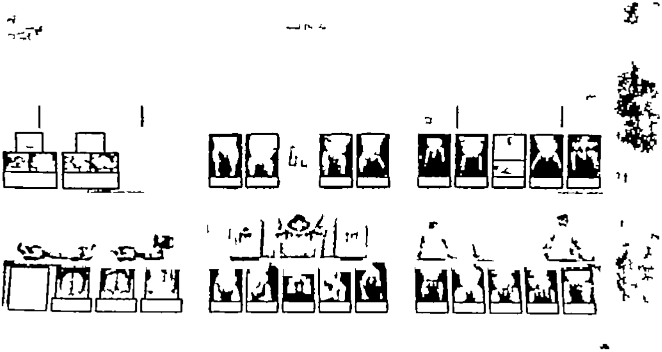
Congenital Dysplasia And Dislocation of the Hip

Lloyd E Harris M D
Section of Pediatrics

Paul R Lipscomb M D
Section of Orthopedic Surgery

Arthur H Bulbulian M S
Museum of Hygiene and Medicine

Mayo Clinic and Mayo Foundation



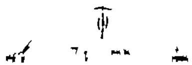
The diagnosis of congenital acetabular dysplasia with or without dislocation of the hips too often is not made until the age of weight bearing in the child or until the condition is evidenced by a painful dysplastic hip in adult life

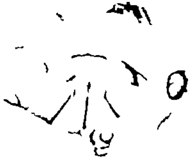
By routine employment of the abduction test in the examination of newborn and older infants the condition may be diagnosed at an early age and simple effective treatment instituted by use of the Frejka pillow splint

This exhibit demonstrates with photographs and models application of the abduction test to determine the presence of congenital disorders of the hip It presents the salient roentgenographic features of congenital acetabular dysplasia before and after treatment and the design and application of the Frejka pillow splint

Clinical Diagnosis

The abduction test is the most important method of discovering early signs of congenital disorder of the hip If performed routinely on all newborn infants and monthly during the first 9 months congenital dysplasia of the hip may be discovered long before the infant begins to walk Even though results may be negative at birth or during the first few months of infancy results of subsequent tests may become positive Positive results of the test indicate dysplasia of hip until proved otherwise A history of hip-joint disorder in siblings and adult relatives should alert one to look for congenital dysplasia in the infant

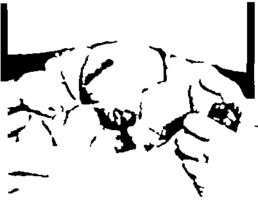


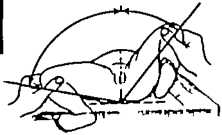


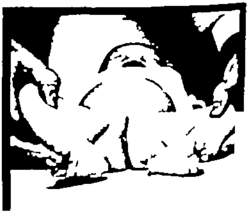
Normal Abduction at Birth

Normal Abduction at 3 Months

With the infant supine on the examining table the abduction test is done by flexing the thighs to 90° and then gently abducting In the normal infant 85° to 90° abduction is easily accomplished This test should be part of the routine physical examination of all infants commencing at birth and subsequently at regular intervals at least up to 9 months





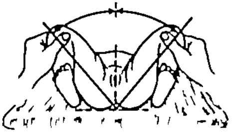


Abnormal Abduction Left Leg at Birth

Abnormal Abduction Right Leg at 3 Months

In congenital acetabular dysplasia with or without displacement of the femoral head abduction of the thigh on the affected side may be limited to 45° to 55° If limitation of abduction is questionable and roentgenograms are inconclusive then the best policy is to treat as acetabular dysplasia

Clinical Diagnosis (Cont)



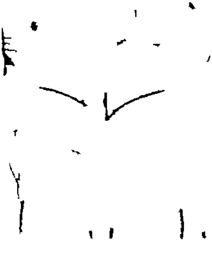
Abnormal Abduction
Both Legs at Birth

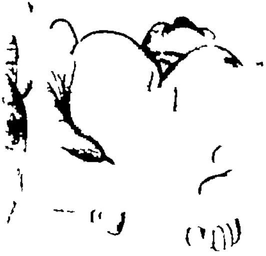
Abnormal Abduction
Both Legs at 3 Months

In bilateral acetabular dysplasia the condition being symmetrical bilateral limitation of abduction may be the only dependable clinical sign Skin folds gluteal creases and leg length may be identical Occasionally arthrogryposis or marked spasticity may limit abduction of the thighs

Other Clinical Signs of Acetabular Dysplasia

Other clinical signs of acetabular dysplasia in addition to limitation of abduction are (1) dissimilarity of the skin folds of the thigh and gluteal creases (2) apparent difference in the lengths of legs and (3) limp if the infant is walking These signs are not entirely dependable for early diagnosis and except for a waddling gait may be absent in bilaterally dysplastic and dislocated hips They are usually found only when there is displacement of the femoral head





Symmetrical Gluteal Creases

In the normal infant the luteal creases and the creases i the skin of the inner aspect f the thighs are usually symmet ical as to depth and number

Asymmetrical Gluteal Creases

In unil teral acet bul dyspla- i with subluxation or luxation, the luteal and thigh creases may be asymmet ical, however they may be symmetrical i bilateral acetabul dyspl i

Apparent Discrepancy in Length of Leg

In unilateral acetabula dyspl ia with subluxation or luxation ap- parent discrepancy in length of leg may be demonstrated, due t displ ment of the femoral head

Clinical Diagnosis

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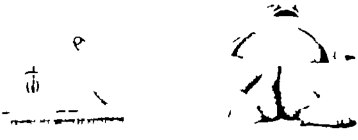
Abnormal Abduction Left Leg at Birth



Abnormal Abduction Right Leg at 3 Months

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Treatment (Cont)

1 Dysplasia With Displacement

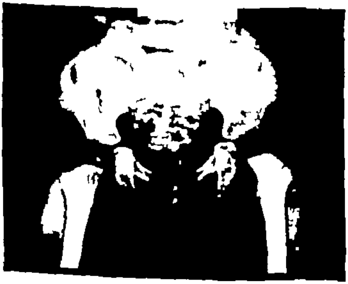
Dyspl si of l ft hip with displ cement at ge 5 months Note displ cement of uppe femur increased acet bul index di rupted Shenton line and shortening of femur Frejka split treatment was in tituted t thi ge

2 Patient 3 Months Later

Patient 3 months ft institution f split treatment Not improvement i t bul r index nd position of uppe femur Hypopl i of l ft femoral head i marked

Frejka Splint in Use

Use of the Frejka splint does not alter the course of growth and development Infants sit alone pull to a stand and walk at the usual age while wearing the splint

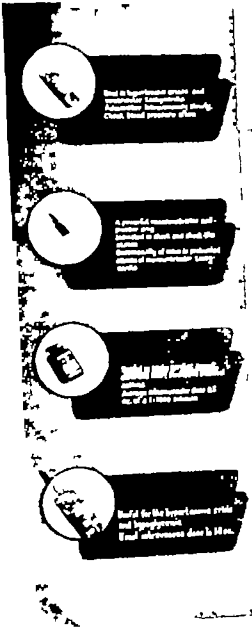


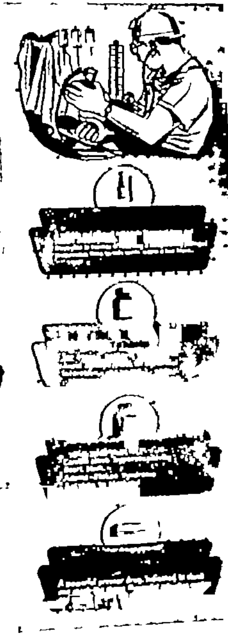
3 Patient 9 Months Later

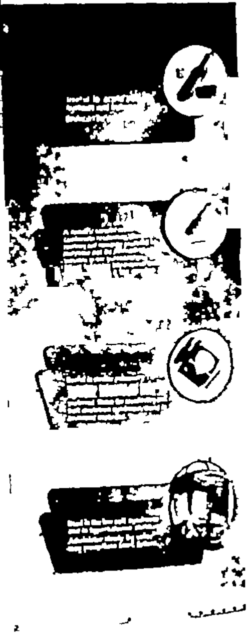
Patient 9 months fter i titution f splint treatment Improvement ha continued but spli t treatment cannot be *discontinued* *Patient wa* *14* months f age t this st ge

4 Patient 12 Months Later

Patient 12 months fter i titution of splint treatment Improvement has continued but splint wa *not discontinued until 7 months later* Chi was 17 months f ge t thi st ge







Comfortable position
Morphine sulfate 5 mg
Aminophylline 0.24 to 0.48
Digitalization
Oxygen
Antifoaming agent
Tourniquets
Parenteral diuretic
Phlebotomy (500 cc of blood

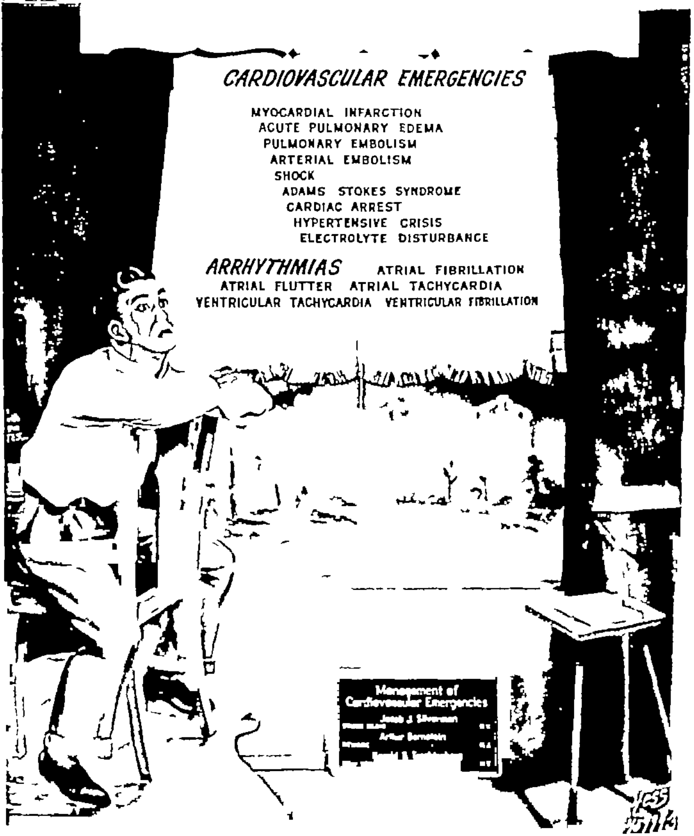
SPINAL LUMBAR PUNCTURE
SEDATION
OXYGEN
FOLEY CATHETER IN BLADDER

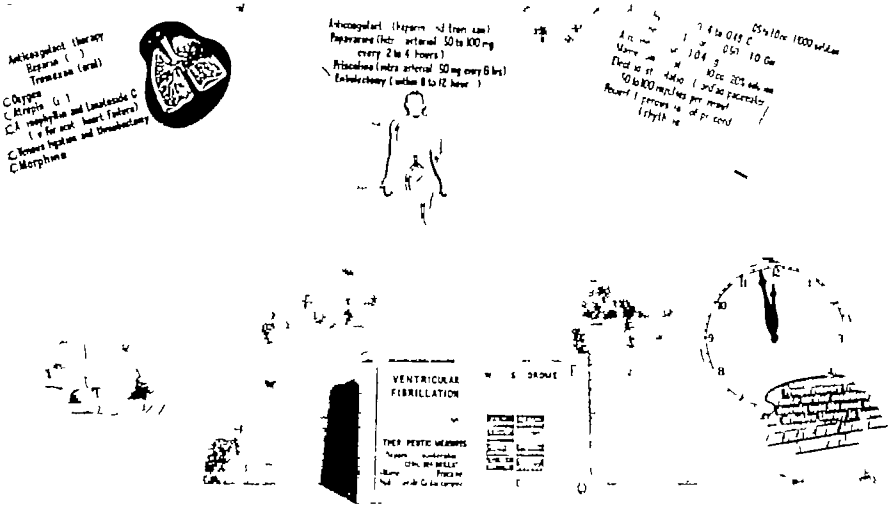
Complete rest
Morphine
Oxygen
Anticoagulants
heparin
and dicumarol

Therapy for Complications
See Shock,
heart failure,
arrhythmias

Management of Cardiovascular Emergencies

CARDIAC EMERGENCIES





Anticoagulant therapy
Heparin ( )
Tromexan (oral)
C Oxygen
C Atropin
C Aminophylline and Lanatoside C
(for acute heart failure)
C Venous ligation and thrombectomy
C Morphine
Papaverine (intra arterial 50 to 100 mg
every 2 to 4 hours)
Priscoline (intra arterial 50 mg every 6 hrs)
Embolectomy (within 8 to 12 hours)
VENTRICULAR
FIBRILLATION

CEDILANID D
PRONESTYL
TROMEXAN
AMINOPHYLLIN

Tension Headache

LESTER S. BLUMENTHAL and MARVIN FUCHS, Washington D C.

Although headache might have many etiologies, most patients with chronic headache have a large element of tension to contend with. This might be the primary cause of headache or it might contribute to a specific headache caused by other factors. The exhibit will attempt to present the way that tension from many different factors in the individual patient contributes to or causes the headache to develop or continue.

MECHANISM OF PAIN IN TENSION HEADACHE

MUSCLE SPASM

PRIMARILY FROM NERVOUS TENSION

PHYSICAL

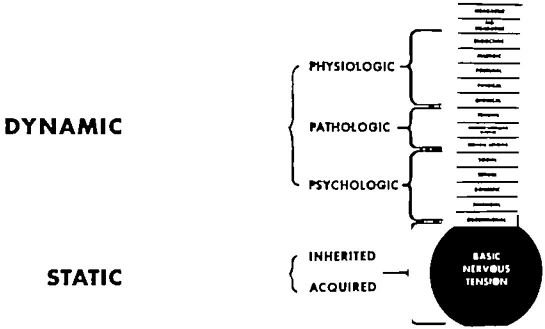
- Postural
- Fibromyositis

VASODILATATION

REFLEX

TOXIC — CHEMICAL

NEURALGIC COMPONENT



SYMPTOMATIC

SEDATIVE—ANALGESICS [illegible]

VASOCONSTRICTORS [illegible]

VASODILATORS [illegible]

PHYSICAL THERAPY

ANESTHESIA OF TRIGGER AREAS [illegible]

PROPHYLACTIC

PSYCHOTHERAPY

SEDATION [illegible]

ENDOCRINE [illegible]

PHYSIOTHERAPY

SYMPATHICOLYTICS [illegible]

VASODILATORS [illegible]

NASAL DECONGESTANTS [illegible]

MANAGEMENT OF PREMENSTRUAL TENSION

CONTROL OF FLUID RETENTION

SODIUM RESTRICTION
AMMONIUM CHLORIDE
BROMTHEOPHYLLIN DERIVATIVES
CARBONIC ANHYDRASE INHIBITOR
MERCURIAL DIURETICS

HORMONE IMBALANCE CORRECTED

SUPPRESSION OF OVULATION
Estrogen
Testosterone
PREMENSTRUAL PROGESTERONE

SEDATIVE—ANALGESICS

ANALEPTICS

CLASSIFICATION OF CHRONIC HEADACHES

TENSION

MIGRAINE

HISTAMINE CEPHALALGIA

ORGANIC VASCULAR DISEASE

HYPERTENSION
ARTERIOSCLEROSIS
TEMPORAL ARTERITIS

INTRACRANIAL DISORDERS

NEOPLASM
ANEURYSM
SUBDURAL HEMATOMA

FROM OCULAR OR NASAL STRUCTURES

NEURALGIAS

CONVERSION REACTIONS

SUMMARY AND CONCLUSIONS

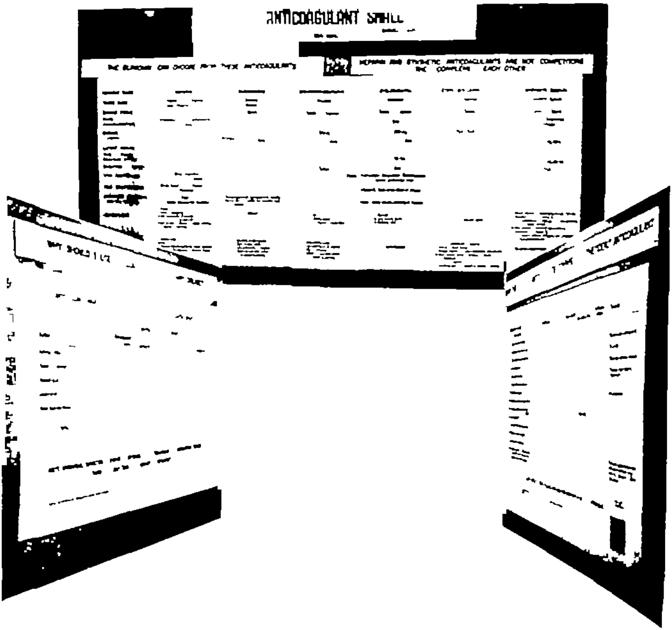
Tension created by physical, nervous or emotional stress plays a definite role in production of practically all forms of head che.

Everyone has a limit to which he can strain his system every twenty four hours.

Headache is one of the most common symptoms that the body uses to warn the patient symbolically that his limits have been e ceeded.

Tension can be created primarily by on particula physical or mental stress, o more often by a accumulation of se e al diffe e t factors acting at the same time.

The patient must learn to recognize how the va ious stresses of his daily life cause tension to mou t toward the breaking poi t. He the must lea n to budget himself so that the summation of these stresses do not exce d his limits.



What Anticoagulant Shall I Use?

SHEPARD SHAPIRO and SAMUEL M GORDON New York.

Satisfactory therapy rests on a triad of diagnosis, selection of therapeutic agent, and control of the therapy The number of anticoagulant drugs available for use in this therapy and being promoted to the physician is increasing. The characteristics of the drugs and their respective advantages and disadvantages are presented in charts to supply information for the proper selection of anticoagulant agent. Contraindications to therapy are described, and the legitimate and contradicted uses of anticoagulant drugs are stressed. Methods for using the anticoagulant drugs to yield the greatest benefit to the patient and with the least number of laboratory tests are presented. Charts show helpful diagnostic aids.

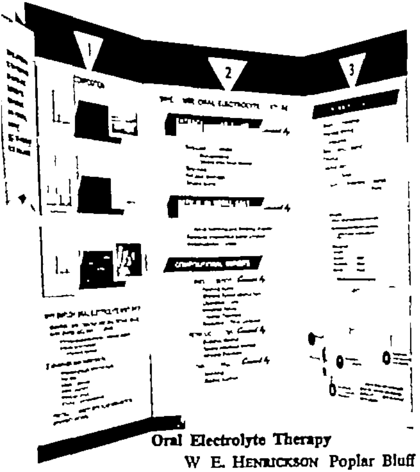
HOW THE AVAILABLE ANTICOAGULANTS COMPARE WITH THE IDEAL* ANTICOAGULANT

Requirements for the Ideal Anticoagulant	HEPARIN	PHENINDIONE	DICUMAROL	CYCLOCUMAROL	ETHYL BISCOUMACETATE	WARFARIN SODIUM	Remarks
1. Oral and parenteral effectiveness	No	No	No	No	No	Yes	
2. Rapid onset of action within one hour	Yes	No	No	No	No	Yes	Warfarin sodium with heparin IV
3. Wide usefulness (e.g. sedated patients)	Yes	No	No	No	No	Yes	IV or IM
4. Side effects absent	Yes	No[1]	Yes	Yes	Yes	Yes	Blood and cutaneous dyscrasias
5. Cumulative effects absent	Yes	No[1]	Yes	Yes	Yes[1]	Yes	Tromexan least likely to accumulate
6. Toxicity absent from prolonged use	Yes	No	Yes	Yes	Yes	Yes	
7. Predictability of response	++++	++	++	++	+	+++	See graph below
8. Uniformity of response from patient to patient	++++	++	++	++	+	+++	
9. Frequency of laboratory tests for initial dosage**	Daily	Daily	Daily	Daily	Twice daily	Daily	
10. Control by patient	No	No	No	No	No	No	
11. Cessation of effect when drug is stopped	++++	++	+	+	+++	+	
12. Cessation of effect by antagonist	++++	++	++	++	+++	+++	
13. Prompt control of overdosage	++++	++	++	++	+++	+++	Excessive hypoprothrombinemia returned to therapeutic range with 0.5 2.5 mg K_1 or 20 mg menadione
14. Ability of antagonist (K_1) to "titrate excessive hypoprothrombinemia to therapeutic range	-	?	?	?	?	Yes	
15. Capacity to respond after antagonist	+++	++	+	+	++	+++	

++++ 100 %
+++ High
++ Medium
+ Low

Warfarin sodium with 2 or 3 doses of heparin most nearly meets requirements of an "Ideal" anticoagulant

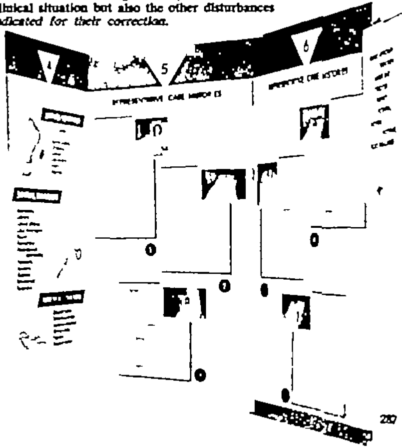
*Adapted and extended from Goodman and Gilman "The Pharmacologic Basis of Therapeutics" Second Edition, and [illegible]
[1] Hemorrhage from excessive dosage [illegible] side effect [illegible] an extension of pharmacologic effect
**These periods may be extended for long range therapy



Oral Electrolyte Therapy

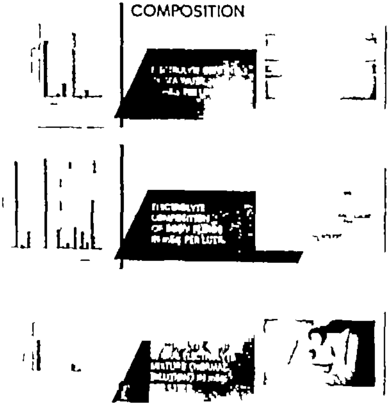
W. E. HENRICKSON, Poplar Bluff, Mo., and J. L. WATSON, Evansville, Ind.

This exhibit is based on the clinical experiences of physicians in general practice employing a recently devised oral electrolyte mixture in several hundred patients. The basic composition and rationale of the mixture are presented by the use of pictorial devices and bar charts. Specific clinical indications for oral electrolyte therapy are summarized. Contraindications are covered. Case histories representative of the indications are summarized. Generous use is made of illuminated color transparencies, diagrams, and charts. Emphasis is placed on the fact that rational clinical use of oral electrolytes requires an understanding not only of the electrolyte imbalances in a given clinical situation but also the other disturbances *present and the mixtures indicated for their correction.*



SIMPLE APPROACH TO THE PROVISION OF WATER AND ELECTROLYTES FOR PATIENTS WITH POTENTIAL, INCIPIENT MILD OR MODERATE FLUID IMBALANCES

COMPOSITION



WHY EMPLOY ORAL ELECTROLYTE MIXTURE ?

I ADVANTAGES OVER COMMONLY USED ORAL FEEDINGS SUCH AS WATER ORANGE JUICE, MILK SOFT DRINKS, BEEF TEA

- Provides needed electrolytes in balanced amounts
- Usually better tolerated
- Constant in composition

II ADVANTAGES OVER PARENTERAL FLUIDS

- Absorbed gradually rather than rapidly
- Far safer
- Easier to administer
- More convenient
- economical
- Involve no painful procedure

III FORESTALLS OR ARRESTS BODY FLUID IMBALANCES IN APPROPRIATE PATIENTS

WHEN USE ORAL ELECTROLYTE MIXTURE ?

EXTRACELLULAR FLUID VOLUME DEFICIT *Caused by*

- Reduced fluid intake
  - Postoperative
  - Severe infectious disease
- Diarrhea
- Fistulous drainage
- Severe burns

DEFICIT IN TOTAL SALT CONCENTRATION *Caused by*

- Excessive sweating plus drinking of water
  Excessive intravenous administration of carbohydrates in water

COMPOSITIONAL DEFICITS

- POTASSIUM DEFICIT *Caused by:*
  - Healing burns
  - Chronic Pyloric obstruction
  - Ulcerative Colitis
  - Intestinal Fistula
  - Chronic Diarrhea
  - Repeated ACTH or Cortisone
- METABOLIC ACIDOSIS *Caused by*
  - Diabetes Mellitus
  - Severe Infectious disease
  - Infantile Diarrhea

  METABOLIC ALKALOSIS *Caused by:*
  - Vomiting
  - Gastric suction

3

CONTRAINDICATIONS

Severe fluid Imbalances
Intractable Vomiting
Unconsiousness
Need for blood or plasma
- Distention
Intestinal obstruction
- Perforated bowel
Impaired body Homeostasis (For example, Oliguria or Anuria)

PREPARED FOR USE

4

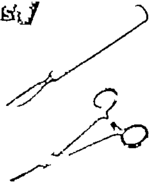
USED IN

MEDICAL CONDITIONS

Acute Gastritis	1
Acute Cystitis	1
Bacillary Dysentery	11
Cholecystitis	2
Diarrhea	2
Gas contents	1
Intestinal Obstruction	1
Nephrosis	1

SURGICAL CONDITIONS

Appendectomy	16
Colectomy	8
Contusion of Kidneys	1
Corpus Hemorrhagicum	1
Fractured Hip	3
Fractured Femur	1
Fibroid Uterus with severe bleeding	1
Hysterectomy	3
Herniotomy	4
Ovariotomy	2
Perforated Peptic Ulcer	1
Postoperative	12



OBSTETRICAL CONDITIONS

Caesarian Section	5
Dilatation Curettage	1
Hyperemesis Gravidarum	4
Morning Sickness	1
[illegible]	3
[illegible]	1

SIMPLE APPROACH TO THE PROVISION OF WATER AND ELECTROLYTES FOR PATIENTS WITH POTENTIAL, INCIPIENT MILD OR MODERATE FLUID IMBALANCES

4

5

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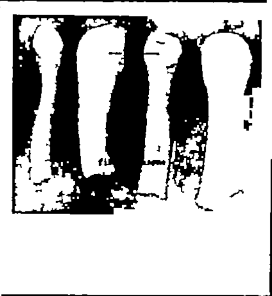
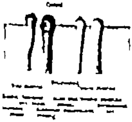


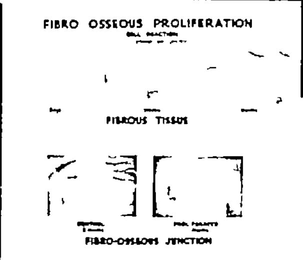


LIGAMENT RELAXATION

STATISTICS

Ages - 15 to 81 years
Longest duration - 49 years
(average 4½ years)
Duration of cures - 16 years
82% considered themselves cured.

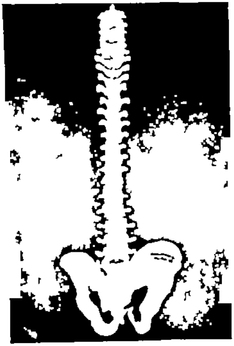
Cases treated - 543

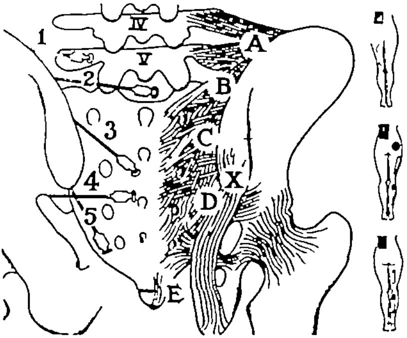


PROLIFERANT-
Sylnasol (G D. Searle & Co)
dose ½ to 1½ c.c

ANAESTHETIC-
Long lasting equivalent to Procaine 2% as Pontocaine 0 15% (Winthrop Stearns Inc)
Sylnasol 25% } combined for
Pontocaine 75% } Proliferation

ADDITIONAL THERAPY-
Man's belt-tight above pubes (also Diagnostic)
Demerol tablets 50 to 100 mgm.





TRIGGER POINTS, REFERRED PAIN AREAS, AND POSITION OF NEEDLES IN CONFIRMATION OF DIAGNOSIS AND TREATMENT OF RELAXATION OF THE POSTERIOR LIGAMENTS OF THE LUMBAR SPINE AND PELVIS

A. Trigger point of the iliolumbar ligaments
- a Referred pain area in the groin and anterior thigh from the iliolumbar ligament (A)
- 1 Position of needle inserted into the outer end of the iliolumbar ligament at its attachment to the ilium (A)

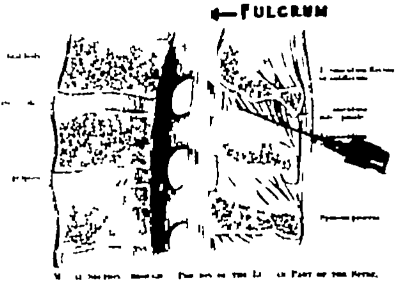
B to C Trigger point area of the upper 2/3rds of the posterior sacroiliac ligament
- b Referred pain are a in the buttock postero-lateral surface of the thigh and outer side of the leg from the upper 2/3rds of the posterior sacro-iliac ligament (B to C)
- 2-3 Needles inserted into the posterior sacroiliac ligament (B to C)

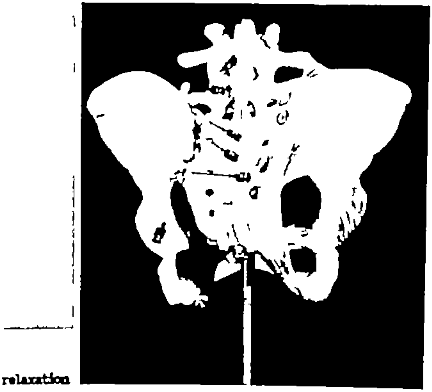
D Trigger point of lower 1/3rd of the posterior sacro-iliac ligament and the upper end of the long posterior sacroili c ligament
- c Referred pain areas in the buttock posterior thigh and leg from the lower 1/3rd of the posterior sacroiliac ligament and the upper end of the long posterior sacroiliac ligament (D)
- 4 Needle inserted into the lower 1/3rd of the posterior sacroiliac ligament (D)
- 5 Needle inserted into the upper end of the long posterior sacroiliac ligament and the lower 1/3rd of the posterior sacroiliac ligament (D)

E Sacrococcygeal ligaments

IV-V Fourth nd fifth lumbar vertebrae

NOTE. The trigger points and referred pain areas have been established while inserting needles and giving over 3000 injections within the ligam nts in the diagnosis and treatment of 528 cases of relaxation of the ilio-lumbar and post rior s croiliac ligaments during the past fifteen years





LOW BACK PAIN

Most often results from ligament relaxation (when chronic or recurrent)

Due to abnormal tension on nerves at the fibro-osseous junction (Trigger point)

Referred to groin, buttock and extremeties (sciatic distribution)

Reproduced by pressure tension (a) with the thumb (b) anaesthetic injection

Abolished by anaesthetic within the ligament (confirms diagnosis)

Permanantly abolished by fibro-osseous proliferation

PROPERTIES OF SGO-TRANSAMINASE

1. Stable at refrigerator temperatures (0-5 C).
2. Unaffected by freezing and lyophilization.
3. Plasma and serum levels the same.
4. Levels reproducible from day to day in the same normal individual.
5. Stored refrigerated sera retain 90% of activity for 4 days.
6. Heating to 100°C will destroy the activity of the enzyme.
7. Mechanism of dissipation of serum activity is unknown but is apparently not renal.

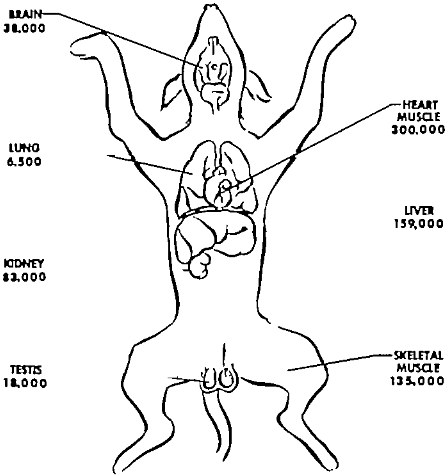
PATHOLOGICAL PHYSIOLOGY OF INCREASED SGO-T ACTIVITY

The ratio of the activity in normal dog serum and dog heart muscle is approximately 10,000 to 1.

Tissue injury results in decrease of GO-T activity in the injured tissue and is associated with relatively proportional increase in the activity of the serum.

Increased SGO-T activity will develop following injury of heart muscle, skeletal muscle, liver and kidney from circulatory, infectious, toxic and traumatic agents. Central nervous system injury is not associated with increases in SGO-T activity. The SGO-T activity after death rises precipitously and is highest in venous reservoirs draining tissues of maximal SGO-T activity.

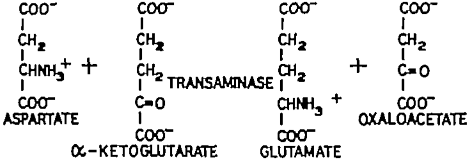
GO-T ACTIVITY OF DOG TISSUES
(APPROXIMATE)

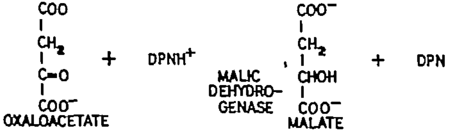


NORMAL RANGE OF SGO-T ACTIVITY

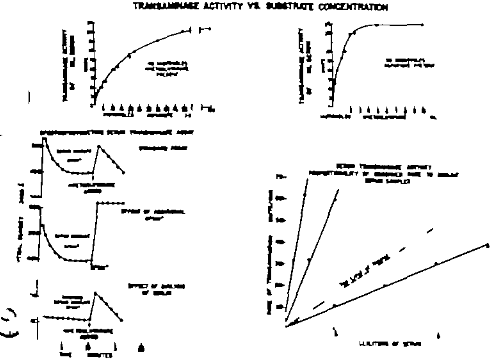
The mean activity in sera of normal adults (age 20 to 65 years) is 22.1 units with a standard deviation of 6.8. The variation of repeated analyses of the same sera was within ± 10%.

CHEMICAL REACTION OF THE SPECTROPHOTOMETRIC TRANSAMINASE ASSAY





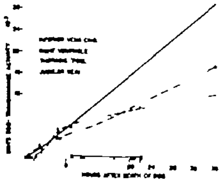
CHEMICAL DYNAMICS OF SGO-T ASSAY

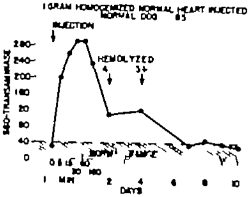


TRANSAMINASE CONCENTRATIONS IN NORMAL AND INFARCTED HEART MUSCLE (UNITS/GM)

DOG	NORMAL MUSCLE	INFARCTED MUSCLE	AGE OF INFARCT	RATIO CONCENTRATION NORMAL/INFARCTED MYOCARDIUM
X 49	200 000	--	--	
X 14?	308 400	230 400	2 hrs	1 3/1
X 33	481 000	218 400	20 hrs	2/1
X 79	468 000	23 000	7 day	20/1
X 110	348 000	33 200	7 days	11/1
X 3	310 000	8 400	9 dy	48/1

Increase in SGO T activity followed for 36 hours after death



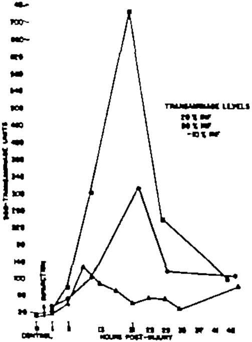


Rate of decrease in SGO-T activity following injection of approximately 300 000 units of GO-T (dog heart)

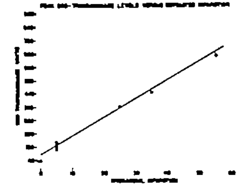
Myocardial infarction in dogs was produced by the installation of plastic spheres into the coronary arteries.

Am. J. Physiol. 166:..., 1951

The SGO-T activity is not only proportional to the degree of myocardial injury sustained but the SGO-T elevation also persists longer the greater the degree of damage.

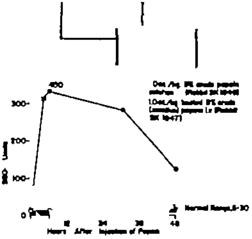


It is also apparent that the peak increase in SGO-T activity is proportional to the estimated percentage of myocardial infarction.



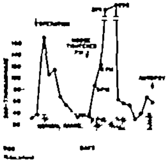
Graded myocardial infarction in dogs was produced by tightening ligature about coronary artery

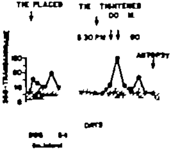
Focal myocardial necrosis with inflammatory response was produced in rabbits by the intravenous injection of varying amounts of papain.

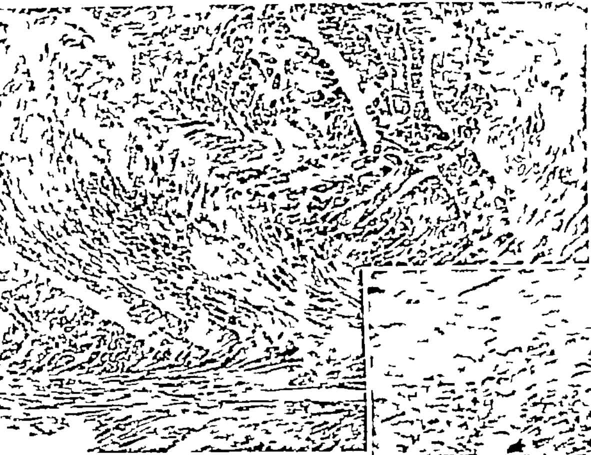


SGO-T activity was again roughly proportional to the degree of heart muscle injury

The following two figures show the rise in SGO-T activity following the surgical procedure and contrast the greater elevation seen following a 15 gm infarct with that observed when less than one gram of heart muscle was infarcted.







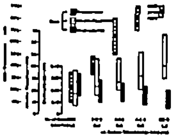
Control rabbit heart

DAY 5

Papain treat

DAY 7

Toxic injury to liver cells was effected by instilling CCl into the stomachs of white rats. SGO-T alkaline phosphatase and cholinesterase activities were determined in serum secured by cardiac puncture.



The increase in SGO-T activity is proportional to the amount of CCl given and is greater than in the case of either of the other enzymes.

Three installations of CCl were given on alternate days to three groups of rats. One group received 0.4 ml., a second 0.8 ml. and the third 1.2 ml., of CCl per installation.

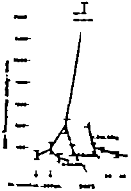
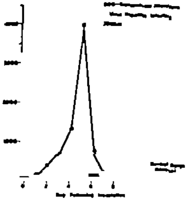
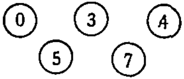


Chart shows the average SGO-T activity on a given day. Note that the SGO-T levels are proportional to the amount of CCl given. The duration of increased activity is also proportional to the amount of chemical toxin administered.

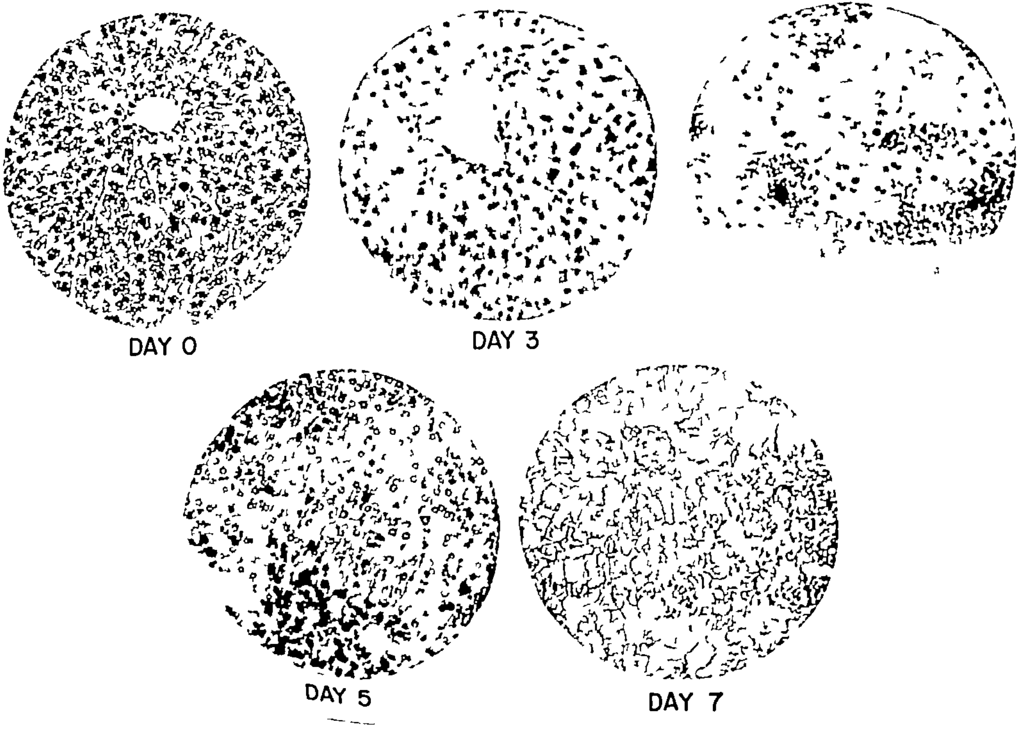
Gross rat liver normal and hepatitis.

Viral hepatitis was produced in 30 mice by intraperitoneal inoculation. The SGO-T activity was followed over a 12 day period.



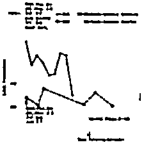


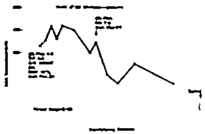
The pl[illegible] to show the relative degree of liver cell damage on the specified day. There is close correlation between the degree of liver necrosis and the level of SGO-T activity.


DAY 0
DAY 3
DAY 5
DAY 7

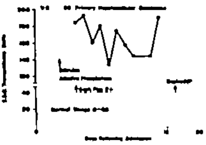
LAENNEC'S CIRRHOSIS

The SGO-T activity in 28 patients with cirrhosis was within normal limits in 8 patients, varied from 41 to 100 units in 14 patients, and was 101 to 1600 units in 6 patients. There appeared to be some relation between the height of the SGO-T activity and the clinical status.



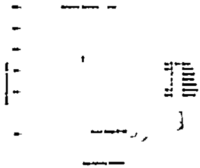


PRIMARY AND METASTATIC CARCINOMA OF THE LIVER



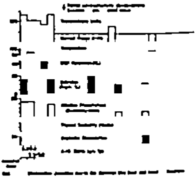
Primary hepatocellular carcinoma of the liver in a 69 year old male was associated with persistent elevation of SGO-T over a twelve day period.

Thirty of forty patients with proved metastatic carcinoma of the liver had increased SGO-T activity over a one week to three month period.



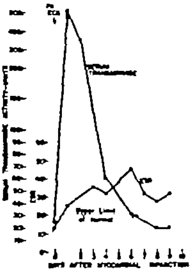
EXTRAHEPATIC OBSTRUCTIVE JAUNDICE

The SGO-T activity following mechanical extrahepatic obstructive jaundice appears to rise moderately but falls promptly following surgical relief

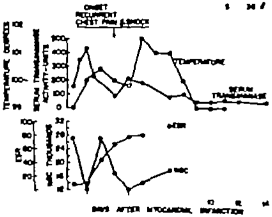


MYOCARDIAL INFARCTION

Typical SGO-T curve following large acute transmural posterior myocardial infarction.

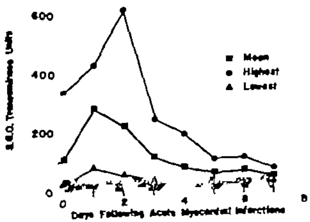


SGO-T curve following acute extension of a transmural anterior myocardial infarct.



The collected series totals 300 patients with unequivocal acute myocardial infarction. ALL but 8 showed characteristic elevation of SGO T

Acute Transmural Myocardial Infarctions

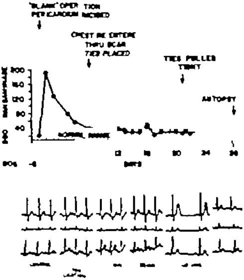


The curves of SGO-T activity following both experimental and human myocardial infarction transcribe a similar pattern. There is a relative correlation between both the height and duration of elevation of SGO-T activity and the degree of myocardial injury

When the highest lowest and mean activity curves are compared, it is obvious that the greater the elevation of SGO-T observed, the longer it remains elevated.

CORONARY INSUFFICIENCY

Experimental



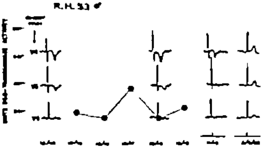
Coronary insufficiency associated with T and ST but no Q wave changes has been produced *experimentally* in dogs. *The* SGO-T remains normal and at autopsy no microscopic evidence of muscle damage has been seen

⬅ In this animal although the ligature completely occluded the coronary artery no infarct was seen. Note the striking T and ST wave changes but no Q wave abnormalities in the EKG. The SGO-T as noted, was *unchanged after tightening the tie* NO INFARCT was found at autopsy

Of 39 patients studied with coronary insufficiency or status anginosus the SGO-T was abnormal at some time in 13. In the latter a delayed elevation of the SGO-T was seen in 70% after the third day of study regardless of whether chest pain had recurred during this time Seven patients showed elevations over 70 units. By definition the study included patients with ST or T wave abnormalities alone and excluded those developing Q waves indicating transmural infarction.

Many other patients with permanent or temporary T wave abnormalities representing ischemia from *left ventricular hypertrophy coronary insufficiency* prolonged tachycardia etc but without chest pain were studied The SGO-T was consistently normal in all.

Clinical



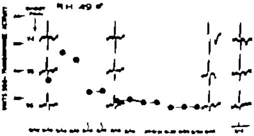
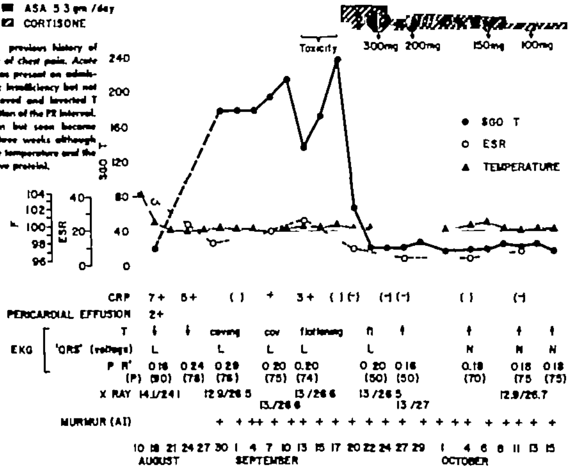


Figure at left illustrates marked, reversible EKG abnormalities in a patient with incapacitating angina recurring every 30 minutes from 10/8 to 10/20. The SGO-T remained normal

Figure at right demonstrates SGO-T elevation in a man who had similar chest pain and EKG changes.

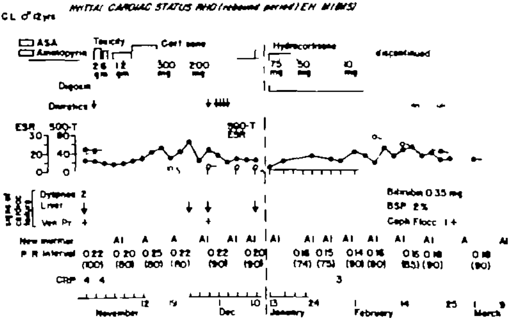
FF ♂ 11yrs INITIAL CARDIAC STATUS POTENTIAL H D (HIST ARF PERICARDITIS)

This eleven year old boy with previous history of rheumatic fever was admitted because of chest pain. Acute pericarditis with pericardial effusion was present on admission. Later the patient developed aortic insufficiency but not congestive failure. The EKG showed coved and inverted T waves in all leads as well as prolongation of the PR interval. The SGO-T was normal on admission but soon became elevated. This elevation persisted for three weeks although aspirin therapy promptly suppressed the temperature and the acute phase reactants (ESR and C-reactive protein).

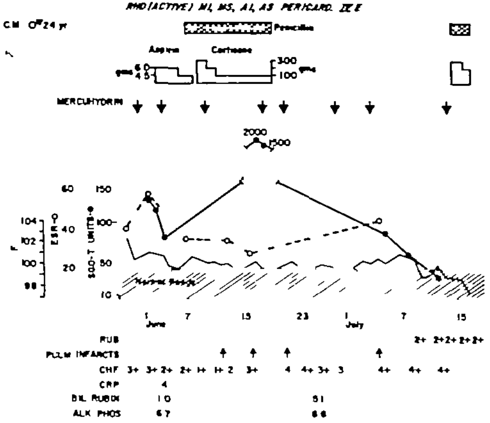


RHEUMATIC FEVER

Elevations of SGO-T have been found during the course of rheumatic fever and were noted only when the heart appeared to be involved by an active inflammatory process. Non-cardiac rheumatic manifestations with and without fever such as polyarthritis, chorea and erythema marginatum and inflammatory joint involvement in rheumatoid and osteo-arthritis were associated with consistently normal levels of SGO-T



In this twelve year old boy with acute pericarditis and moderate congestive heart failure the SGO-T was normal initially but rose after administration of cortisone in dosage adequate to control the signs of inflammation. A second rise in SGO-T was seen during the period of mild laboratory rebound following cortisone withdrawal



The SGO T was elevated in this patient for 39 days out of a 47 day period of study falling to normal 4 days before death At autopsy gross and microscopic evidence of severe diffuse inflammation of the heart with extensive myocardial fibre necrosis was present Many Aschoff nodules were seen There was congestion of the central veins in the liver but very little cellular necrosis

Of the 64 patients studied in various stages of rheumatic fever abnormalities in SGO-T were noted only in those in whom active cardiac involvement was probably present

TYPES OF PATIENTS STUDIED	Number Patients	Number Abnormal	Number Tests	Number Tests Abnormal
I Active Rheumatic Carditis				
(a) W th Congestive Failure	9	8	267	51
(b) Without Congestive Failure	8	3	231	14
II Questionably Active Rheumatic Carditis	9	6	64	13
III Rheumatic Fever without Cardiac Involvement				
(a) Polyarthritis	3	1	71	15
(b) Chorea and Erythema Marginatum	9	0	101	0
IV Inact ve Rheumatic Fever Previous Card tis				
(a) Recent Convalescent	12	0	96	0
(b) Remote Adults with RHD	9	0	32	0
V Virus Pneumonia in Rheumatic Subjects	8	1	31	1
VI Rheumatoid A[illegible] Acti	16	0	35	0

Two apparent exceptions are seen but the patient with virus pneumonia had grossly abnormal EKG transiently and the patient with polyarthritis developed a systolic murmur of changing intensity and had laboratory evidence of continuing inflammation This suggested the probability of active myocardial involvement in both

Microscopic evidence of active rheumatic carditis was found in the auricular biopsy or at autopsy in ten out of fifteen patients studied. Half of the ten patients with carditis showed elevation of the SGO-T prior to operation or autopsy. The one patient with an abnormal SGO-T without evidence of active inflammation showed patchy replacement of myocardial fibres by fibrous tissue.

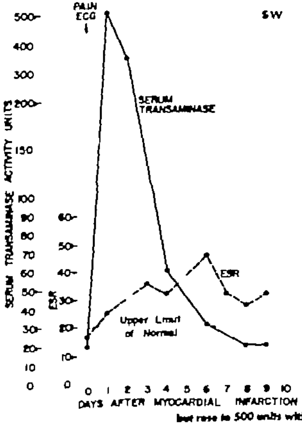
	PATHOLOGICAL FINDINGS	Total No. showing change	No. showing change with elevated SGO-T
A	Acute Inflammation	10	5
	Aschoff Nodules		3
	Round Cell Infiltration		2
	Active Myocardial Cell Necrosis	1	
	Fibrinoid Degeneration of Collagen		3
	Non-Inflammatory Changes	5	1
	Myocardial Fibrosis	1	1
	Hypertrophy without Other Changes		0

*27 sera were analysed of which 2 were abnormal

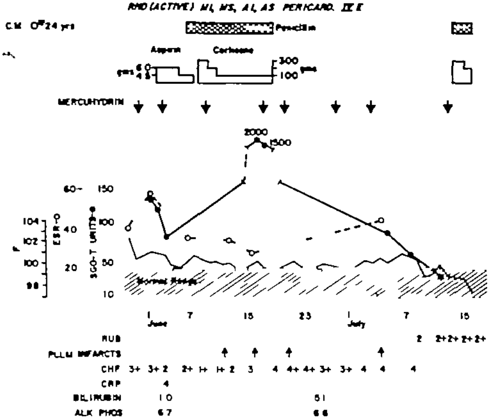
MYOCARDIAL INFARCTION

CASE NO. D 113

Human acute transmural myocardial infarction was associated with an increase in the SGO-T activity in 98 of 100 patients studied. Characteristically the curves showed an increase in enzyme content appearing within four hours and persisting for 48 to 150 hours post injury.



This curve describes the SGO-T activity in a 60 year old white male who developed crushing substernal pain at time zero associated with sh ck mild h a r failure and clinical EKG evidence of a transmural post- le I f rct Th SGO T activity was within normal limits three hours post-injury but rose to 500 units within 12 hours, falling off gradually to normal by the sixth day. Note the lack of correlation with the ESR.



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(a) Recent Convalescent	12	0	96	0
(b) Remote Adults with RHD	9	0	32	0
V Virus Pneumonia in Rheumatic Subjects	8	1	31	1
VI Rheumatoid Arthritis Active	16	0	35	0

Two apparent exceptions are seen but the patient with virus pneumonia had a grossly abnormal EKG transiently and the patient with polyarthritis developed systolic murmur of changing intensity and had laboratory evidence of continuing inflammation This suggested the probability of active myocardial involvement in both

CERTIFICATE OF MERIT

Cushing's Syndrome

A Progressive and Often Fatal Disease

A Review of 100 Cases Seen Between July 1945 and July 1954

Randall G Sprague, M D   Raymond V Randall, M D

Robert M Salassa M D   Donald A Scholz M D

Section of Medicine

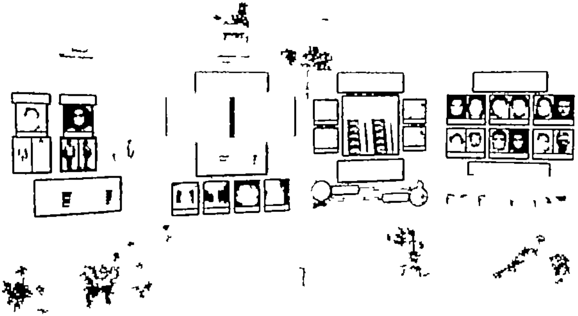
James T Priestley M D   Waltman Walters M D

Section of General Surgery

Arthur H Bulbulian, M S

Museum of Hygiene and Medicine

Mayo Clinic and Mayo Foundation



Cushing's syndrome, in its severe form, is a serious condition that impairs survival and is associated with a high degree of morbidity While its remote causes have not yet been accurately ascertained it is now well established that the condition is a direct consequence of excessive secretion of steroid hormones by hyperplastic or neoplastic adrenal cortices No form of medical treatment in our hands has been uniformly effective

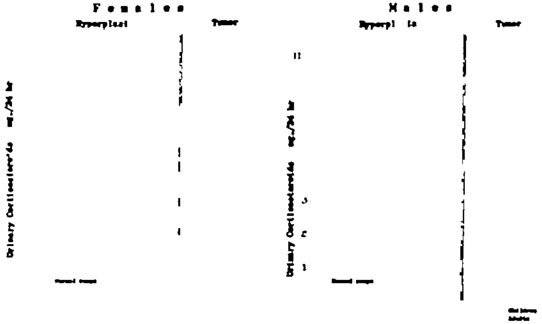
The exhibit consists of (1) a description of the clinical and laboratory features of the syndrome, (2) a review of theories of its pathogenesis and the salient features of its endocrine pathology, (3) the surgical treatment in 100 patients who had either tumors or hyperplasia of the adrenal cortex and (4) data and photographs illustrating results of adrenalectomy or excision of adrenal cortical tumors in patients with Cushing's syndrome

Laboratory and Roentgenologic Studies Are Helpful but not Diagnostic

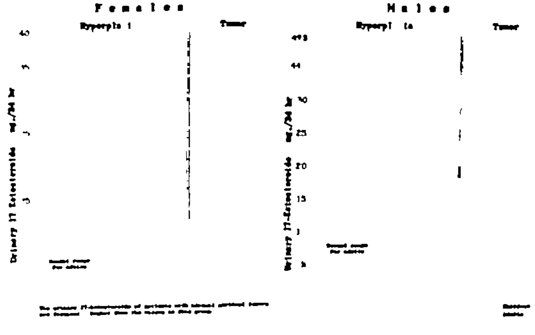
In Cushing's syndrome, urinary 17-ketosteroids vary depending in part on the type of the adrenal lesion Urinary corticosteroids and blood 17-hydroxysteroids are usually increased

Other laboratory findings may include alkaline urine lymphopenia eosinopenia polycythemia hyperglycemia and hypochloremic hypopotassemic alkalosis A frequent roentgenologic manifestation is osteoporosis of the spine pelvis, skull and other bony structures Collapse of vertebrae and spontaneous fractures of ribs may occur Renal calculi or nephrocalcinosis may be present Rarely is there roentgenologic evidence of a pituitary tumor

Preoperative Values of Corticosteroids



Preoperative Values of Urinary 17-Ketosteroids



Cushing's Syndrome
Laboratory Findings in 100 Cases

*Data obtained from [illegible] cases in which carbohydrate metabolism was adequately studied.

Pathologic Fractures
Pathologic fractures of the ribs secondary t[o] osteoporosis occurred in 20 cases

Renal Calculi
Renal calculi were found in [illegible] cases and nephrocalcinosis in 2 cases.

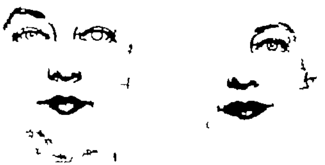
Pituitary Tumors
Pituitary tumors were demonstrated roentgenologically i[n] 6 cases. Osteoporosis of the skull was seen in 33 cases

Osteoporosis of Sp
Osteoporosis of the spine was [illegible]; in 17 of these collapse vertebrae was present

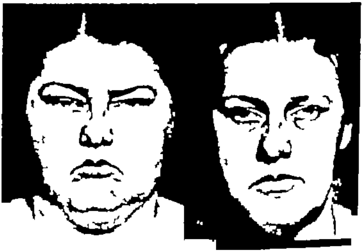
Operation on the Adrenal Gland Is the Treatment of Choice

Surgical removal of a hyperfunctioning adrenal cortical tumor or extensive resection of hyperplastic adrenal glands is consistently followed by a remission of the signs and symptoms of Cushing's syndrome No other treatment in our hands has afforded equally satisfactory results

All of the 100 patients whose cases form the basis of this exhibit were treated surgically There were seven hospital deaths, five of these occurring among the early cases before cortisone became available Considering the poor prognosis of Cushing s syndrome the surgical mortality is not excessive Availability of cortisone has greatly facilitated preoperative and postoperative care of these patients



Woman 36 Years Old
With Cushing's Syndrome (Left)
Appearance of Patient 30 Months Following
Left Subtotal and Right Total
Adrenalectomy (Right)



Woman 32 Years Old
With Cushing's Syndrome (Left)
Appearance of Patient 23 Months Following
Left Subtotal and Right Total
Adrenalectomy (Right)

Woman 24 Years Old
With Cushing's Syndrome (Left)
Appearance of Patient 6 Months Following
Removal of a Low-Grade
Adrenal Cortical Carcinoma
Weighing 10 5 Gm (Right)

Child 17 Months Old
With Cushing's Syndrome (Left)
Appearance of Patient 9 Months Following
Removal of an Adrenal Cortical Carcinoma
Weighing 35 Gm (Right)

Boy 13 Years Old
With Cushing's Syndrome (Left)
Appearance of Patient 13 Months Following
Left Subtotal and Right Total
Adrenalectomy (Right)

Boy 17 Years Old
With Cushing's Syndrome (Left)
Appearance of Patient 12 Months Following
Left Subtotal and Right Total
Adrenalectomy (Right)

Summary of Results of Surgical Treatment

Of 81 patients treated by adrenalectomy (67 subtotal, 14 total) for adrenal cortical hyperplasia 63 are currently in remission from 8 months to 9 years (average over 3 years); seven died postoperatively; [illegible] died later after satisfactory remission; four are not in full remission [illegible] are [illegible] in two patients. Incidence of recurrence to date has been about 10 per cent.

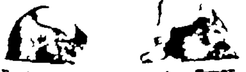
Of 19 patients treated by excision of adrenal cortical tumor 18 are currently in remission from 9 months to 8 years (average over 3½ years). One died of metastatic adrenal cortical carcinoma.

Enlarged Adrenal Glands

Frequently enlarged hyperfunctioning adrenal glands are found. Total adrenalectomy on one side and subtotal (90 per cent) adrenalectomy on the other [illegible] the usual procedure. Occasionally bilateral total adrenalectomy is performed to insure against recurrence.

Adrenal Glands of [illegible]

Occasionally [illegible] of normal size may be [illegible] syndrome. [illegible] (90 per cent) [illegible] total) [illegible] [illegible]



Benign Hyperfunctioning Tumor of Adrenal Gland

A benign hyperfunctioning tumor of the adrenal cortex may cause Cushing's syndrome. Such tumor is removed and the opposite gland, which is atrophic, is preserved. In time the atrophic gland regains normal function.

INTRODUCTION

Hardening of the arteries in well-preserved mummified Egyptians who died 2000 years ago was recently described by British workers.

"Ossification" of the arteries was well-established in the minds of physicians by the middle of the 17th century.

In 1912, Herrick recognized the clinical and pathological entity of coronary sclerosis

Today arteriosclerosis and cardiovascular diseases are the major causes of death in Western countries

Factors in the Development of Atherosclerosis of Coronary Arteries:

A *Hereditary*

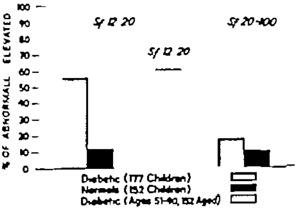
1. familial hypercholesterolemias
2. general systemic body types as related to incidence of coronary sclerosis
3. local anatomical-distribution of size angles, branching and thickness of coronary vessels. Previous inflammation
4. sex male incidence of coronary occlusion 4x as prevalent as female in pre-menopausal age. Does the higher estrogen levels of the female inhibit early coronary sclerosis?

B *Acquired or environmental*

1. stress of modern living
2. hypertension
3. diet Studies on serum cholesterol and individual diets in various countries are compatible with the theory of a direct relationship between dietary fat serum cholesterol and disposition to degenerative heart disease Ancel Keys OBESITY?
4. disease states associated with hypercholesterolemia nephroses,' hypothyroidism, diabetes mellitus?, biliary cirrhosis

Serum Betalipoproteins in Diabetic Children and Diabetic Aged

SERUM BETA LIPOPROTEINS IN DIABETIC CHILDREN (Age 9 15 Yrs)



SOMATOTYPE AND SERUM BETALIPOPROTEINS IN JUVENILE DIABETICS

	MALE		FEMALE	
	Number of cases	*High Lipoprotein*	*Number of cases*	*High Lipoprotein*
Dominant Endomorph	7	5	31	22
Endo-Mesomorph or Meso-Endomorph	24	11	7	4
Dominant Mesomorph	26	7	0	0
Dominant Ectomorph	1	0	0	0
Ecto-Mesomorph	1	1	0	0
Mixed	1	0	2	1
Total	60	24	40	27

Female juvenile diabetics show a higher level of betalipoproteins with comparable age group of males. The endomorphic component seems to be related to the lipoprotein levels more than the ectomorphs or mesomorphs

"NORMAL VALUES OF SERUM BETALIPOPROTEIN (Sf 12 20 and 20-100 classes) AT VARIOUS AGE LEVELS

Age in Years	*Sf 12 20*	*Sf 20-100*
0 14	0 14	6-30
15-30	15 30	30-50
30 40	30-40	30-60
40-50	30-40	40-70
50 60	30 40	40-70
60 70	30 40	40-70
75 *plus*	30 40	40-70

Increased Serum Betalipoproteins in Hypertension

HYPERTENSION WITH NO ANGINA PECTORIS (38 CASES)

Age	No	Sex	Sf 12-20 Av in mg %	Sf 20-100 Av in mg %	Ballisto cardiogram	Electro cardiogram	Blood Pressure (Fundus Classif)
20-29	3	3 M	59	77	3 Normal	3-Normal	3-Grade I
30-39	6	6-M	31	55	1 Normal	4 Normal	4 Grade I
					5-Grade 1	1 Left Axis Dev	2-Grade II
						1 Strained Patt	
40-49	13	8-M	51	88	1 Normal	9 Normal	8 Grade I
		5 F			6-Grade 1	1-Left Vent Hyper	4-Grade II
					4 Grade 2	1-Bundle Branch Block	1-Grade III
					2 Grade 3	2 Strained Patt	
50-59	11	7 M	60	101	3-Normal	9 Normal	10 Grade I
		4 F			4 Grade 1	1 Left Vent Hyper	1-Grade II
					4 Grade 2	1-Bundle Branch Block	
60-69	5	3-M	59	79	1-Normal	1 Normal	3 Grade I
		2 F			2 Grade 1	2 Left Axis Dev	2-Grade II
					2 Grade 2	2 Left Vent Hyper	

CURRENT CONCEPTS IN ATHEROSCLEROSIS: A Study in Dynamics

FROM MESSINGER RESEARCH LABORATORY, Beth El Hospital, B'klyn, N.Y.

BODY TYPES AND DEGREE OF CORONARY SCLEROSIS

100 autopsied normal males under 48 years of age *(sudden accidental death)*

ENDOMORPH

Typical coronary of "normal" 45 year old male

MESOMORPH

Typical coronary of "normal" 45 year old male

ECTOMORPH

Typical coronary of "normal" 45 year old male

TYPE OF PHYSIQUE AND THE DEGREE OF CORONARY SCLEROSIS
(100 Males Under 46, Victims of Accidental Death)

Body Type	Number of Cases	Average Age			Degree of Coronary Sclerosis	3+	
Mesomorph	39	36	4	10	14	7	4
Ectomorph	31	33	17	8	5	1	0
Endomorph	13	35	4	7	2	0	0
Mixed	17	34	6	6	3	2	0
	100		31	31	24	10	4

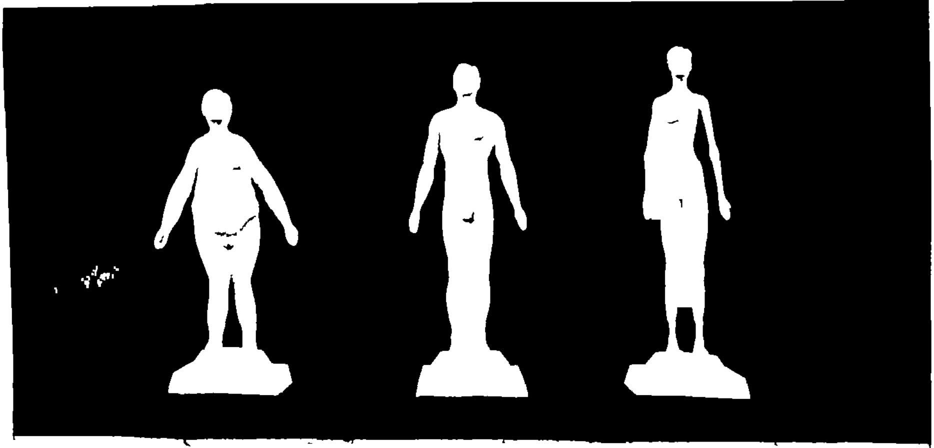
DISTRIBUTION OF SOMATOTYPES IN 64 CONSECUTIVE NECROPSIED CASES OF SUDDEN DEATH FROM CORONARY OCCLUSION IN MALES UNDER 48

Dominant Somatotype	
Mesomorph	49
Ectomorph	6
Endomorph	10
Mixed	15
Total	80

CORRELATION OF DEGREE OF CORONARY SCLEROSIS WITH SERUM BETALIPOPROTEIN IN 143 CONSECUTIVE NECROPSIES

	Total	
Average degree of sclerosis for age and sex "Normal" serum betalipoprotein	40	120 (84%) positive correlation
Advanced degree of sclerosis for age and sex "Abnormal" betalipoprotein	80	
Average degree of sclerosis for age and sex "Abnormal" serum betalipoprotein	12	23 (16%) no correlation
Advanced degree of sclerosis for age and sex "Normal" serum betalipoprotein	11	

Sex and Body Type	Number Cases	No Correlation	Correlation
Males	135		
Ectomorphs	28	11	17 (60%)
Mesomorphs, Endomorphs, mixed	105	11	94 (90%)
Females	13	1	12 (92%)



Endomorphy

1. Roundness and softness of body
2. Anterior and posterior diameters and the lateral diameters tend toward equality
3. Predominance of abdominal and thoracic volume over extremities
   Predominance of abdomen over thorax
5. Rounding and hamming of thighs and upper arms
6. Smoothness of contours.
7. No muscle relief
8. Short tapering limbs
9. Vertebral column appearing relatively straight
10. Small bones

Mesomorphy

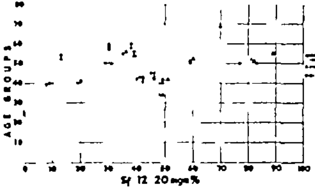
1. Squareness and hardness of body
2. Rugged prominent, massive muscling
3. Transverse diameter exceeding anterior posterior diameter
4. Trunk large and heavy muscled
5. Thoracic volume predominating over abdominal volume.
6. Pelvis sturdy and powerful.
7. Wrist heavy
8. Both arms and legs evenly proportioned as to proximal and distal segment
9. Relatively sharp forward bending in the lumbar region.

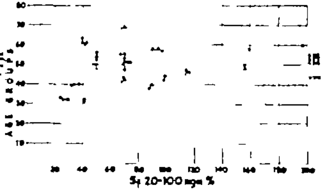
*The dimensions obviously could not be determined post mortem.

Ectomorphy

1. Linearity, fragility and delicacy of body
2. Slight, thready muscles.
3. Anterior posterior diameters extremely reduced
4. Transverse diameters reduced, but not so sharply as the anterior posterior diameters.
5. Shoulders droop
6. Limbs relatively long
7. Lumbar curve flat and high.
8. Abdomen flat and relatively short, and of shallow depth
   Distal segments of extremities relatively long
10. Neck long and slender
11. Small facial mass as compared to cranial mass

Serum Betalipoprotein in Hypertensive Disease and Coronary Artery Disease





O Normotensive subjects with no apparent Heart Disease
× Hypertension with no Angina Pectoris
▲ Angina Pectoris (no evidence of Infarction)
Myocardial Infarction

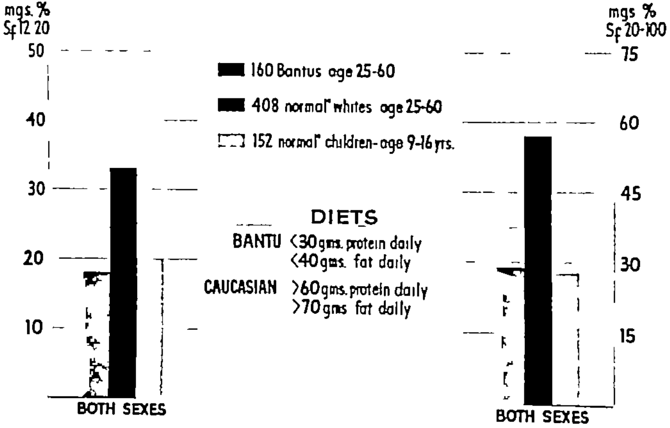
MYOCARDIAL INFARCTION (29 cases)

AGE	No	SEX	Sf 12-20 Av mg %	Sf 20-100 Av mg	BALLISTO-CARDIOGRAM	ELECTRO-CARDIOGRAM	BLOOD PRESSURE (Fundus Classif)
30-39	3	3 M	65	117	3-NORMAL	1 NORMAL 2-HEALED INFARCT	3-NORMOTENS
40-49	10	10 M	57	119	0-NORMAL 3-GRADE 1 7-GRADE 2	0-NORMAL 1 STRAINED PATT 9 HEALED INFARCT	1-NORMOTENS 2-GRADE I 1-GRADE II
50-59	11	7 M 4 F	54	100	2 NORMAL 0-GRADE 1 5-GRADE 2 4-GRADE 3	0-NORMAL 2 MYOCARD CHANGES 1-VENT HYPER 8-HEALED INFARCT	7-NORMOTENS 2-GRADE I 2-GRADE II
60-69	5	4 M 1 F	45	78	0-NORMAL 1-GRADE 1 2 GRADE 2	0-NORMAL 1-MYOCARD CHANGES 1-STRAINED PATT	3-NORMOTENS 1-GRADE I 1-GRADE III

ANGINA PECTORIS (No Evidence of Infarction-35 cases)

AGE	No	SEX	Sf 12-20 Av mg %	Sf 20-100 Av mg %	BALLISTO-CARDIOGRAM	ELECTRO-CARDIOGRAM	BLOOD PRESSURE (Fundus Classif)
30-39	1	M	49	188	1-GRADE 1	1 NORMAL	GRADE I
40-49	14	9-M 5-F	52	124	0-NORMAL 2-GRADE 1 9-GRADE 2 3-GRADE 3	10-NORMAL 3-LEFT VENT HYPER 1-COR. INSUF	7-NORMOTENS 4 GRADE I 3-GRADE II
50-59	15	6-M 9-F	54	109	0-NORMAL 2 GRADE 1 10-GRADE 2 3-GRADE 3	7 NORMAL 3-LEFT VENT HYPER 2-B – Bund Block 3-STRAIN PATT	4-NORMOTENS 3-GRADE I 8-GRADE II
60-75	5	3-M 2-F	59	80	0-NORMAL 0-GRADE 1 2-GRADE 2 3-GRADE 3	3-NORMAL 2-MYOCARD CHANGES	3-NORMOTENS 2-GRADE II

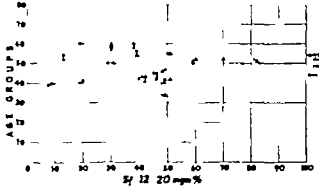
Comparison of Serum Lipoprotein Levels of the South African Bantu* with N.Y.C. Caucasians

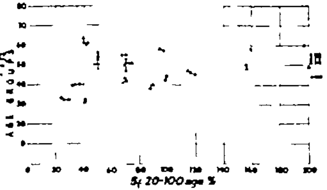


Only about 5% of the South African Bantus over the age of 50 die of coronary atherosclerosis

*Specimens sent through efforts of Dr. Bloomberg of Johannesburg, So. Africa and Dr. Roble of N.Y. State College of Medicine, Brooklyn, N.Y.

Serum Betalipoprotein in Hypertensive Disease and Coronary Artery Disease





O Normotensive subjects with no apparent Heart Disease
× Hypertension with no Angina Pectoris
▲ Angina Pectoris (no evidence of Infarction)
Myocardial Infarction

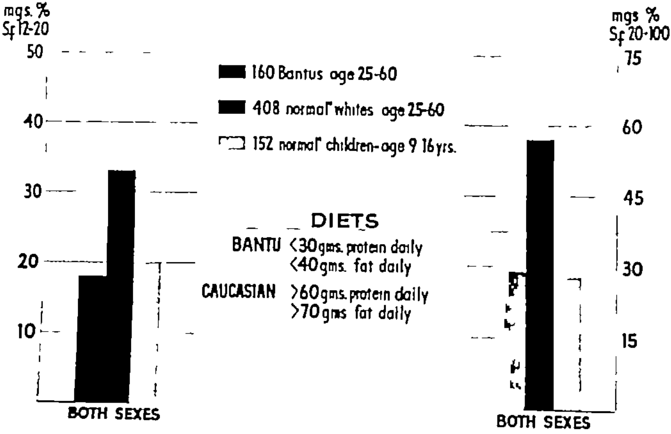
MYOCARDIAL INFARCTION (29 cases)

AGE	No	SEX	Sf 12-20 Av mgm%	Sf 20-100 Av mg	BALLISTO-CARDIOGRAM	ELECTRO-CARDIOGRAM	BLOOD PRESSURE (Fundus Classif)
30-39	3	3 M	65	117	3-NORMAL	1-NORMAL 2-HEALED INFARCT	3-NORMOTENS
40-49	10	10 M	57	119	0-NORMAL 3-GRADE 1 7-GRADE 2	0-NORMAL 1-STRAINED PATT 9 HEALED INFARCT	1-NORMOTENS 2-GRADE I 1-GRADE II
50-59	11	7 M 4 F	54	100	2-NORMAL 0-GRADE 1 5-GRADE 2 4-GRADE 3	0-NORMAL 2 MYOCARD CHANGES 1-VENT HYPER 8-HEALED INFARCT	7-NORMOTENS 2-GRADE I 2-GRADE II
60-69	5	4 M 1 F	45	78	0-NORMAL 1-GRADE 1 2 GRADE 2	0-NORMAL 1-MYOCARD CHANGES 1-STRAINED PATT	3-NORMOTENS 1-GRADE I 1-GRADE II

ANGINA PECTORIS (No Evidence of Infarction-35 cases)

AGE	No	SEX	Sf 12-20 Av mg %	Sf 20-100 Av mg %	BALLISTO-CARDIOGRAM	ELECTRO-CARDIOGRAM	BLOOD PRESSURE (Fundus Classif)
30-39	1	M	49	188	1-GRADE 1	1-NORMAL	GRADE I
40-49	14	9-M 5-F	52	124	0-NORMAL 2-GRADE 1 9-GRADE 2 3-GRADE 3	10-NORMAL 3-LEFT VENT HYPER 1-COR INSUF	7-NORMOTENS 4 GRADE I 3-GRADE II
50-59	15	6-M 9 F	54	109	0-NORMAL 2 GRADE 1 10-GRADE 2 3-GRADE 3	7 NORMAL 3-LEFT VENT HYPER 2-Bundle Branch Block 3-STRAIN PATT	4-NORMOTENS 3-GRADE I 8-GRADE II
60-75	5	3 M 2-F	59	80	0-NORMAL 0-GRADE 1 2-GRADE 2 3-GRADE 3	3-NORMAL 2 MYOCARD CHANGES	3-NORMOTENS 2-GRADE II

Comparison of Serum Lipoprotein Levels of the South African Bantu* with N Y C Caucasians



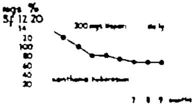
Only about 5% of the South African Bantus over the age of 50 die of coronary atherosclerosis

*Specimens sent through efforts of Dr. [illegible] of Johannesburg, So. Africa and Dr. [illegible] of N.Y. State College of Medicine, Brooklyn, N.Y.

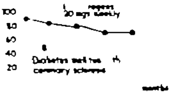
Therapeutic Modalities

The therapies suggested for the hyperlipemic patients are numerous but experiences in our clinic indicate the following

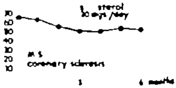
a **HEPARIN** – in xanthoma tubersum very favorable In coronary sclerosis debatable Use 100 200 mgms I M daily Disadvantages are expense and inconvenience



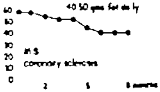
b **ESTROGEN** orally or on occasions I V, in shifting cholesterol from the beta to the alpha lipoproteins a more favorable environment to the blood vessel intima is created The estrogens have the drawbacks of inducing feminization in males



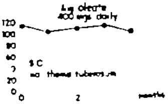
c **"BLOCKING AGENTS"** soy bean sterols such as sitosterol have been used in some cases with moderate success in lowering lipoproteins This oral preparation presumably competes with cholesterol for absorption from the G I tract



d **DIET** low fat and/or low cholesterol by careful instructions to the patient on this type of diet and with full cooperation of the patient substantial decreases in blood serum lipoproteins and cholesterol can be obtained in most instances The diet is of questionable value if it produces emotional stress



e **DISPERSING AGENTS ADSORBENTS**, etc.; magnesium oleate silica gels, magnesium hydroxide etc have little or no effect in reducing serum lipoproteins or cholesterol High levels of thyroxine or thyroid hormone may reduce the lipoproteins (GOFMAN)



CONCLUSIONS

1 Atherosclerosis is not necessarily part of the aging process It has been shown to be present in the aortas of consecutively autopsied children who died of extraneous causes (Holman) Many elderly people have minimal atherosclerosis

2 It is believed that the atheroma are sporadic in nature and may come and go [illegible] From this we infer that atherosclerosis [illegible]

[illegible] a reversible process unless the atherosclerogenesis [illegible] sufficiently rapid and permanent in the intima

[illegible] experimentally induced aortic atherosclerosis by goitrogens and high cholesterol feedings in dogs can be reversed if thyroid hormone is substituted for goitrogens (BEVANS)

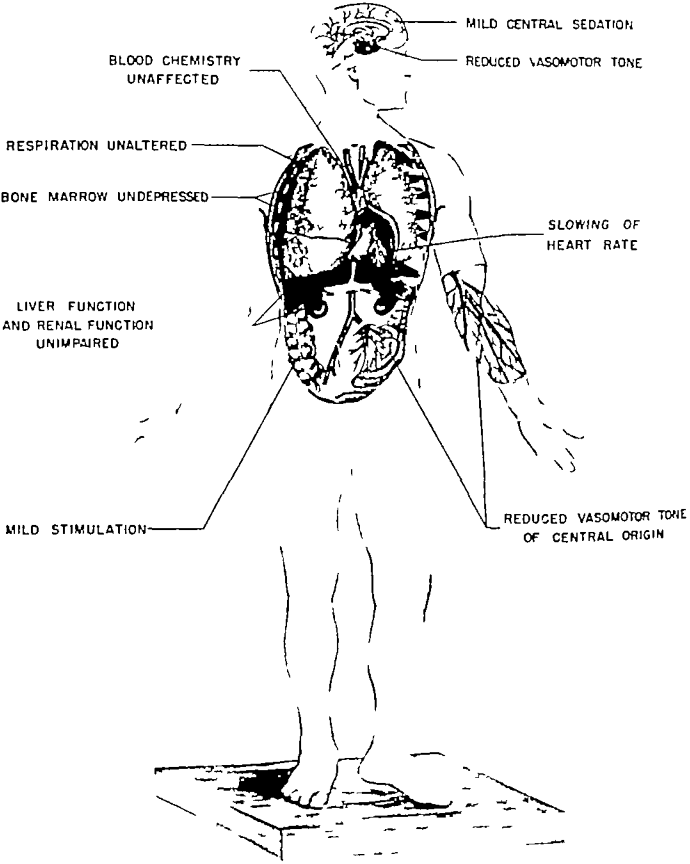
3 There is no substitute for good history and clinical evaluation of the patients [illegible] Along with this accurate laboratory studies of the subjects serum lipids with particular reference to cholesterol and/or cholesterol containing macromolecules

The Management of Essential Hypertension.

JOSEPH C. EDWARDS, Washington University School of Medicine St. Louis.

The exhibit presents a study of patients with hypertensive disease, some with malignant hypertension, followed for one to three years on Rauwolfia serpentina preparations including reserpine, Veratrum compounds including alkavervir and protoveratrine A and B maleates, hexamethonium, hydralazine and pentapyrrolidinium pentolinium tartrate either singly or in combination at certain periods. Charts show blood pressure readings taken in the sitting, standing, and recumbent positions. The dangers and possible harmful effects of the drugs are given. The need for a substitute for apresoline is stressed because of its deleterious effect with a rheumatoid or lupus-like reaction in some patients. The necessity for careful observation, cooperation of the patient, and intelligent instruction on all of the pharmacology and possible dangers of these drugs, as well as their ultimate benefits, are stressed in order to avoid serious or new diseases that might result.

PHARMACOLOGIC EFFECTS
RAUWOLFIA SERPENTINA EXTRACT *(ROXINIL)*



THE MANAGEMENT OF THE PATIENT WITH ESSENTIAL HYPERTENSION

1 Establish the existence of elevated systolic and diastolic blood pressure over several days period

2 Complete history

3 Exclude specific conditions which might cause hypertension
   a Cushing s syndrome
   b Adrenal tumors
   c Polyarteritis nodosa
   d Primary kidney disease pyelonephritis etc

4 Determine relative importance of etiologic factors

5 Recognize the degree of involvement and the degree of progression. All patients do not need the drugs Some improve with emotional adjustment and light sedation only

6 Blood pressure readings on successive days under different conditions and positions

7 Ophthalmoscopic examination.

8 Urinalysis concentration test I V PSP and blood N P N especially if albuminuria is present

9 Determine heart size

10 Exercise tolerance test

11 Electrocardiogram

TREATMENT

Appraisal of the personality of the patient starting with careful history

Understanding and reassuring the patient may give the greatest degree of symptomatic relief

Convince the patient of the unimportance of definite pressure levels and the normal variation from hour to hour day to day under varying conditions

Rest and reassurance help so many with hypertension, so be careful in evaluating new treatments

Sedatives

Psychotherapy

Veratrum alkaloids
Protoveratrine

Rauwolfia serpentina
(reserpine alseroxlyn)

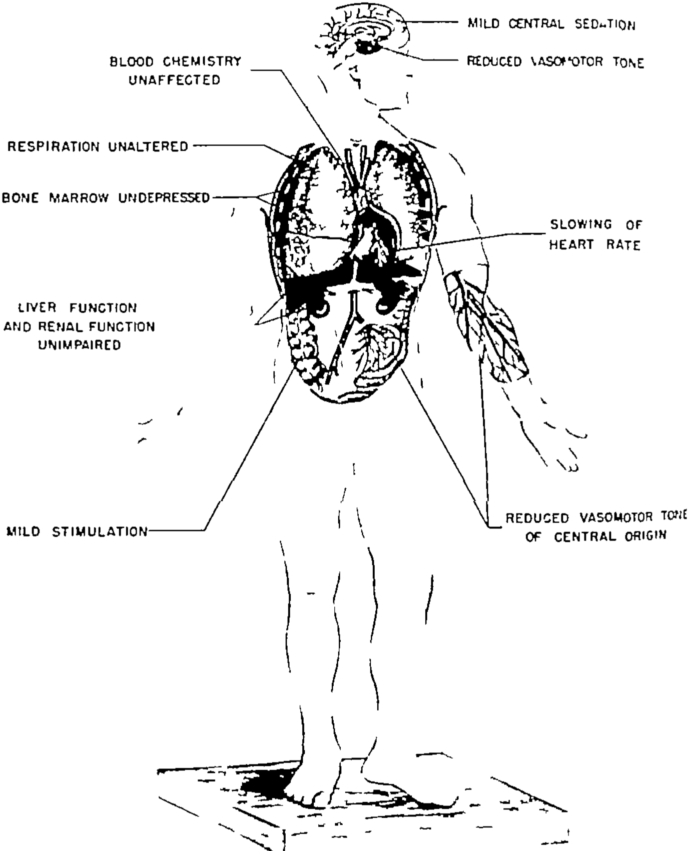
Low sodium diet (1 gm)

Hexamethonium chloride a ganglionic blocking agent, helps lower blood pressure but gives a variable control Pentolinium newer blocking agent is thought to have some advantages over hexamethonium.

1 hydrazinophthalazine(hydralazine)alone will control many patients with hypertension, but the two combined give a more uniform control of blood pressure. Hydralazine antagonizes humoral pressor agents and acts on smooth muscle of blood vessels

See instruction for directions of hexamethonium chloride pentolinium and hydralazine dosage toxic effects and management

PHARMACOLOGIC EFFECTS RAUWOLFIA SERPENTINA EXTRACT *(ROXINIL)*



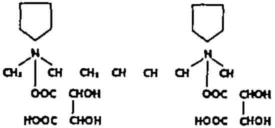
It w   not   permanent change in th   of our pati nt   in whom joint sw lling feve and positive   ephalin hol t   ol flocculation live function test   occur ed. Positive LE   ll te t ha   been d   ribed.

HEXAMETHONIUM

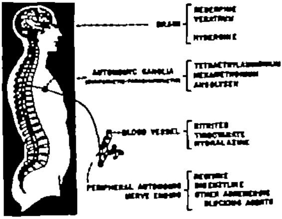
Ganglionic blocking   gent   uch   HEXAMETHONIUM and PENTOLINIUM block nerve transmi   ion   t the autonomic ganglia

Toxi   action to HEXAMETHONIUM   thos due to atonomi pa alysi dryne   of th mouth diminution of g   tric   id nd sweat, dimini hed activity of the inte tine   bladder and g nito urinary tract muscle with di turbanc   of

PENTOLINIUM TARTRATE



SITES OF ACTION OF DRUGS USED IN HYPERTENSION



COMPARISON CHART

	ORAL HEXAMETHONIUM	ORAL PENTOLINIUM TARTRATE (ANSOLYSEN)
DURATION OF ACTION	HOURS	8–10 HOURS
POTENCY	1 : 6	
SIDE EFFECTS	FREQUENT	MINIMAL
DRUG RESISTANCE	ACQUIRED RAPIDLY	MINIMAL
PREDICTABLE RESPONSE	NO	YES
EFFECTIVE	50%	90%

[illegible]

ju ulation in   ome mal patients   Paralysis of the muscl   of the iri   and lens with disturbanc   in accommodation may occur   The   ha   been   few instanc of inte   titial pulmona y fibrosi   eported. Ganglionic blocking   gents HEXAMETHONIUM or PENTOLINIUM, may caus   postural hypotension. If too la g   an amount or uneven   bsorption occur   due to   constipation,   syncope   para lytic ileus may   sult.

PENTOLINIUM

As   ganglionic blocking   gent, PENTOLINIUM has   ome advantage   over HEXAMETHONIUM. The   i le   constipating effect,   specially afte   the fir t weeks   and   yet no pulmonary change   have been   eported in patients on

40 percent may be dead in three year RESERPINE and HYDRALAZINE (300 t 400 mg pe day) will control about half of the case eventually the emaind will equir the addition of ganglionic blockade With time the patient may xhibit reve al of the proc and ma ked reduction of dosag ; in tw o three year a maj rity can be maintained on RESERPINE alone and a f w will be in a complete but po sibly temporary emi sion.

PROTOVERATRINE, 1 to 2 mg bef re breakfa t, 0 5 to 1 mg at 11:00 A.M. and 0 5 mg to 2 mg t 4 00 to 5 00 P M. will ontrol ome moderately eve hypertensi fairly well if combined with RAUWOLFIA.

MODERATELY SEVERE TO SEVERE HYPERTENSION

The patients have reduced but adequat enal function, ocular fundi with narrowing and spasm and cle sis of arterie with without hemorrhag exudate (Keith Wagne Grade II and III) with fixed hypertension not relieved by h vy edation. "In this tag 40 percent are dead in three year ; ganglionic blockad plus adequate dos of HYDRALAZINE (500 mg or more pe day) ential f ontrol. (Schroed H.) The edative action of RESERPINE may help decrea the fluctuations of blood p e ure.

PROTOVERATRINE with RAUWOLFIA help ome but ide effect on lar d nec ary ar dete rents to their us in seve hyperte ive malignant hype tensive

Suicidal tendencie and paranoid state have bee found to occur in two patient whil taking RAUWOLFIA. Fr is Schroed and othe have noted thi als

VERY SEVERE, ACCELERATED PHASE" OF PARERA OR MALIGNANT HYPERTENSION

Ea ly hemo rhagic and exudative etiniti is present but not ma ked (Grade III to IV Keith W gne) and renal function is reduced but adequate.

"Severe in which etention is advanced and enal function is borde line

Azotemic in which nitrogen etention ha occur ed, three yea survival are ne ly 100 pe ent in on ly 10 pe ent f sev and 50 percent for azotemic without frank emia (Schroed)

W g ee with Schroede that g nglionic blockade plus adequate dose of HYDRALA ZINE (500 to 1000 mg pe day) ar ential f reversal of thi g oup. The dosage may be educed after yea or le In those with nitrogen etention smaller doe equi ed but f an indefinit time in rd to ont ol blood p sure.

The ystolic pre ur ca ually be maintained at or nea f rmer diastolic pr ur if it i educed g adually ove period of weeks. Death omplications often eul when the drug ar suddenly discontinued in those with vere or accele ated hypertension.

Thos who fail to respond well to tr tment with ganglionic blocking gent and/ HYDRALAZINE RAUWOLFIA hould be -evaluated and may equire hospitalization -admi ion to inc se dosag of one gent, then the othe to the maximum, and the ttain ontrol. Thos who still have poo re ults hould have trial of PROTOVERA TRINE with ll othe me ur ll ted unde management of the hypertensive Thi include 1 gram odium diet le aft the othe caus for hypertension excluded. The includ Cu hing yndrome pheochromocytoma, polyarteriti nodosa, p imary enal di pyelonephriti and coarctation of the aorta.

METHOD OF ADMINISTRATION

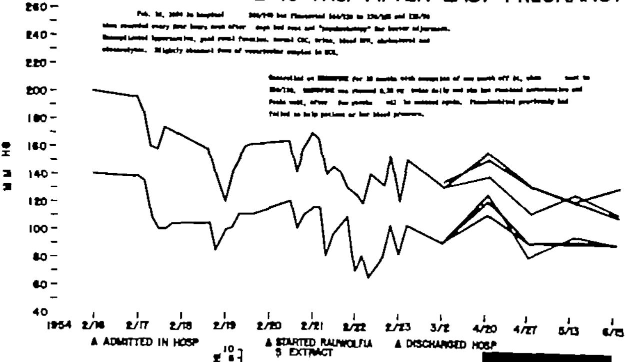
It is my practic to admini te PENTOLINIUM thre to four time daily bef meal Seve hypertensive with good enal function equire four ome time five dose of PENTOLINIUM to g t unif rm ontrol if one follow blood pr sur eve y fou hours.

Some may get adequate control on three doses daily HEXAMETHONIUM 1 g ve round 7 00 A. M. 11 00 A. M. 3 00 P M. 7 00 P M. and 10.00 or 11 00 P M. before meals. PENTOLINIUM does not as a rule give much trouble with constipation as does HEXAMETHONIUM, specially after the first month. Laxative must be used if necessary to avoid constipation, which causes g eate percentage of absorption of the ingested HEXAMETHONIUM with severe hypotensive reaction or even ileus and severe drop in blood pressure.

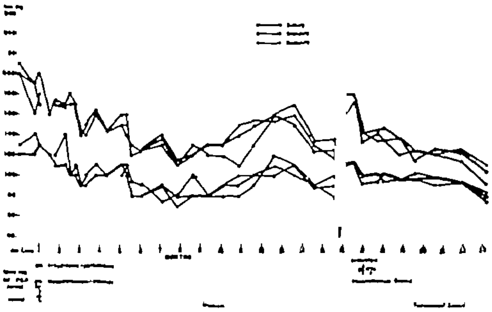
A very few patients may be controlled on 1-hydrazinophthalazine. Prior administration of HEXAMETHONIUM or PENTOLINIUM abolishes most of the undesirable side effects of 1 hydrazinophthalazine (HYDRALAZINE) such as headaches, nausea, and palpitation. In these hypertensive patients with severe benign or moderately severe hypertensive disease, both ganglionic blocking agent HYDRALAZINE and/ RAUWOLFIA(RESERPINE) may be necessary. Many with "malignant" or accelerated hypertension require all three types of agents.

Many patients whose hypertension has recurred some months or years following sympathectomy may have successful regulation of blood pressure on HYDRALAZINE alone or combined with RAUWOLFIA. A few may be cautiously treated with the addition of PENTOLINIUM.

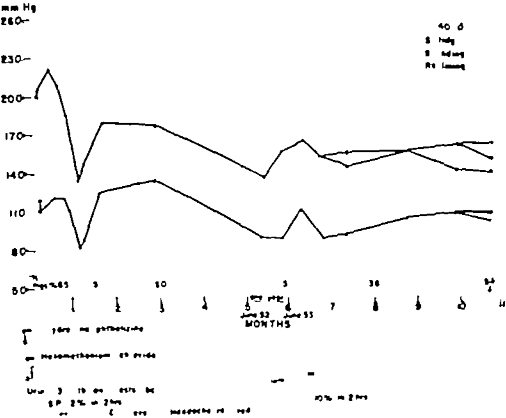
R F AGE 38 – F
KNOWN HYPERTENSIVE 10 YRS. AFTER LAST PREGNANCY



[redacted]

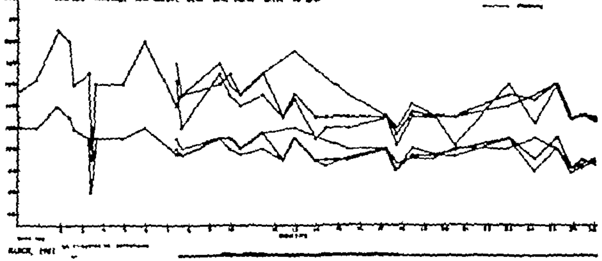


HEXAMETHONIUM ... 1955

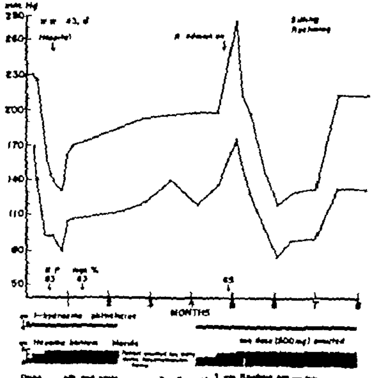


R. R. female age 41 yrs.

Known hypertensive with severe occipital headaches since 1945. B. P. 240/130 in Toledo, Ohio Hospital 1949. Normal renal function, no pheochromocytoma by test; slight left ventricular enlargement by x-ray and ECG. Angina pectoris, frequent nasal hemorrhages. Bilateral thoraco-lumbar sympathectomy 1949. B. P. [illegible] normal for over year, patient improved. First seen in St. Louis in 1951, B. P. 230/130 in sitting and reclining positions, 300/130 standing. [illegible]



She failed to respond to 1 gm. sodium diet. She did well on HYDRALAZINE until Feb. 22, 1954 when it was discontinued because of red swollen tender left ankle, [illegible] fever, which returned to normal. B. P. then [illegible] RESERPINE 0.25 mg. [illegible] daily and later addition of [illegible] which failed to give good control of B. P. or angina until [illegible] was added [illegible] on April 21 1956. [illegible] B. P. remains normal [illegible] feels better.



[illegible]

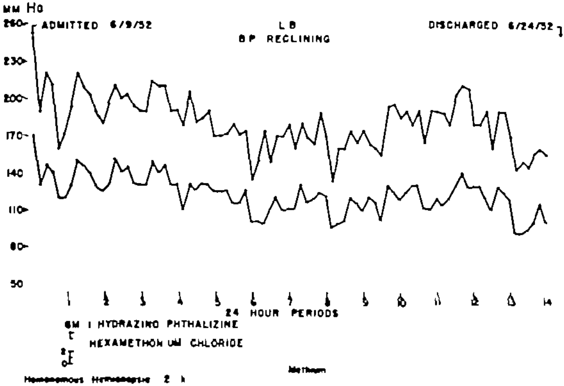
Bl d p y f h t h h pi l ill why d m di g

t h ffl m y h mi l di g m f d f bl h g g d d

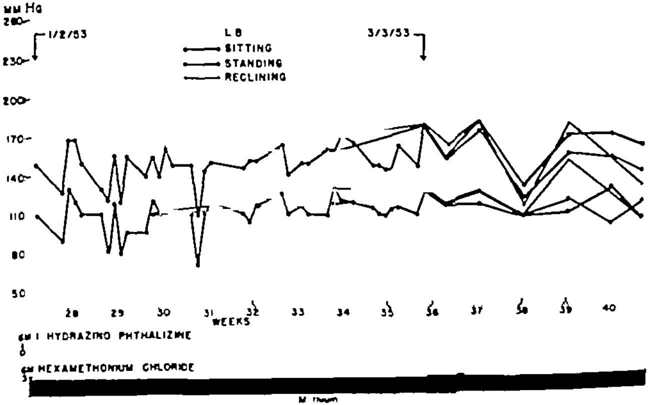
R ll t ch t d h ffi bl d p f high

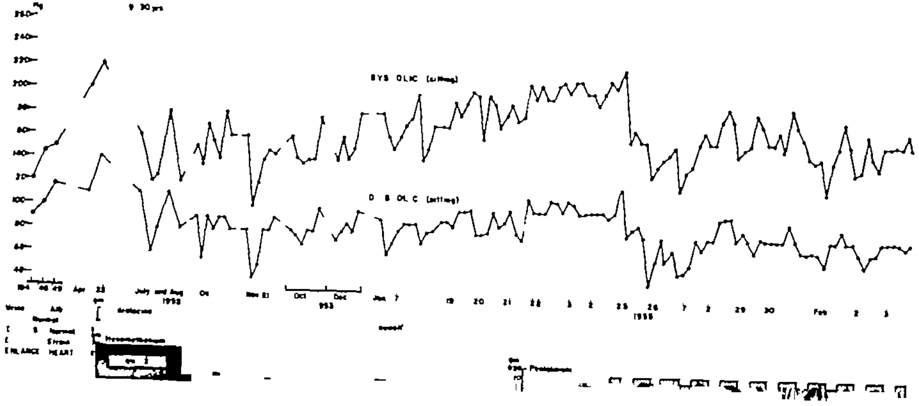
h h k h m ll w p h m ll d g h h h

wl migh h idl g d g d y p



Still t ll d t b t m bl d p l l t M y 1953 **PENTOLINIUM** 70 mg t 7 00 A M 3 00 d 11 00 P M d 20 mg t 11 00 A M with **HYDRALAZINE** 50 mg ft tim d ily d **RESERPINE** 0 25 mg twi d ily





RA OLFIA

PE OLI (UM)

May 20 1955

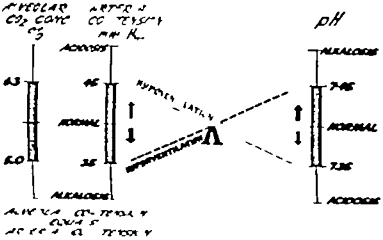
ENTIRE BODY

HYPOVENTILATION VOL. OF AIR IS INADEQUATE TO MEET BODY REQUIREMENTS

- *INCREASE IN ALVEOLAR CO_2 CONC.*
- *INCREASE IN CO_2 CONTENT AND CO_2 TENSION OF BLOOD*
- *DECREASE IN pH (RESPIRATORY ACIDOSIS)*
- *DECREASE IN ALVEOLAR O_2 AND THEREFORE ARTERIAL O_2 LEVEL*
- *MAIN COMPENSATORY CHANGE BICARBONATE RETENTION*

HYPERVENTILATION VOL. OF AIR IN EXCESS OF BODY REQUIREMENTS

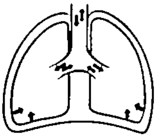
- *DECREASE IN ALVEOLAR CO_2 CONCENTRATION*
- *DECREASE IN CO_2 CONTENT AND CO_2 TENSION OF BLOOD*
- *INCREASE IN pH (RESPIRATORY ALKALOSIS)*
- *MAIN COMPENSATORY CHANGE BICARBONATE EXCRETION*



ALVEOLAR CO_2

SCHEMATIC DIAGRAMS OF LUNG FUNCTION

VENTILATION IS THE MOVEMENT OF AIR INTO AND OUT OF THE LUNGS



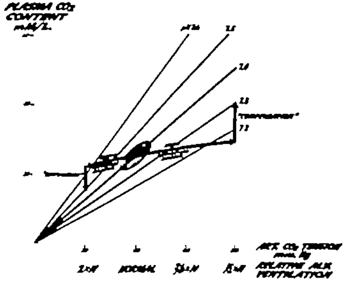
	NORMAL RANGE AT REST ml/min
TOTAL VENT. (MINUTE VOL.)	7,000 1,000
DEAD SPACE VENT	2,000 ± 500
ALVEOLAR VENT.	5,000 1,000
CO_2 OUTPUT	250 ± 50

(Body Metabolism Represented by Flame)

TOTAL VENT. ml/min.	DEAD SPACE VENT. ml/min.	ALVEOLAR VENT. ml/min.	CO_2 OUTPUT ml/min.	ALVEOLAR CO_2 CONC. %
7,000	2,000	5,000	250	$\frac{250}{5000} \times 100 = 5\%$
NORMAL				
6,600	4,000	2,600	250	$\frac{250}{2500} \times 100 = 10\%$
ALVEOLAR HYPOVENTILATION				
12,000	2,000	10,000	250	$\frac{250}{10000} \times 100 = 2.5\%$
ALVEOLAR HYPERVENTILATION				

THE ALVEOLAR CO_2 CONCENTRATION IS A GOOD MEASURE OF THE DEGREE OF ALVEOLAR VENTILATION IN RELATION TO THE BODY REQUIREMENTS

ACID-BASE BALANCE



HYPOVENTILATION CAUSES RESPIRATORY ACIDOSIS. THIS MAY BE PARTIALLY COMPENSATED BY INCREASED RETENTION OF BICARBONATE

HYPERVENTILATION CAUSES RESPIRATORY ALKALOSIS. THIS MAY BE PARTIALLY COMPENSATED BY INCREASED EXCRETION OF BICARBONATE

TESTS AVAILABLE

BLOOD (Arterial blood essential in evaluating respiratory changes)

- pH (glass electrode)
- P_{CO_2} (Riley method of Riley)
- PLASMA CO_2 CONTENT (Van Slyke)

} ANY TWO WILL GIVE COMPLETE EVALUATION

- CO_2 COMBINING POWER (of no value in respiratory changes because there is no primary change in alkali reserve)

ALVEOLAR AIR

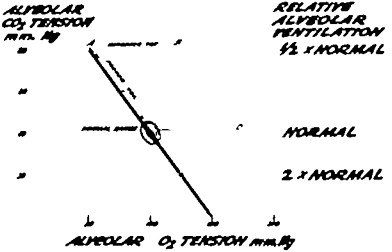
- INFRARED ANALYSIS—Rapid. No interference with breathing

ALVEOLAR O_2

NORMAL VENTILATION MAINTAINS A SUPPLY OF ALVEOLAR O_2 THAT IS FAR IN EXCESS OF REQUIREMENTS

HYPOVENTILATION LOWERS ALVEOLAR O_2

HYPERVENTILATION INCREASES ALVEOLAR O_2 ONLY SLIGHTLY AT SEA LEVEL MAY BE VERY NECESSARY AT HIGH ALTITUDES



The heavy line indicates all possible alveolar gas concentrations in steady state (R.Q. = 0.8) while breathing air at sea level

A SEVERE HYPOVENTILATION WITH HYPOXIA

B SEVERE HYPOVENTILATION—IMPROPERLY TREATED BY INHALATION OF 9% ADDED O_2. HYPOXIA IS RELIEVED BUT THERE IS NO CHANGE IN CO_2

C NORMAL VENTILATION—PROPER TREATMENT OF CONDITION A

D NORMAL VENTILATION WITH 9% ADDED O_2

E SEVERE HYPERVENTILATION—ONLY SLIGHT INCREASE IN O_2

ENTIRE BODY

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HYPERVENTILATION VOL. OF AIR IN EXCESS OF BODY REQUIREMENTS

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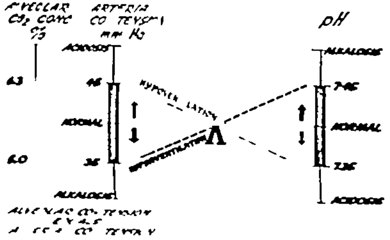
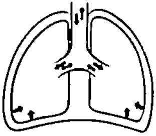
- INCREASE IN pH (RESPIRATORY ALKALOSIS)
- MAIN COMPENSATORY CHANGE BICARBONATE EXCRETION



ALVEOLAR CO_2

SCHEMATIC DIAGRAMS OF LUNG FUNCTION

VENTILATION IS THE MOVEMENT OF AIR INTO AND OUT OF THE LUNGS



	NORMAL RANGE AT REST ml/min
TOTAL VENT.	7,000 1,000
DEAD SPACE VENT	2,000 + 500
ALVEOLAR VENT	5,000 ± 1,000
CO_2 OUTPUT	250 ± 50

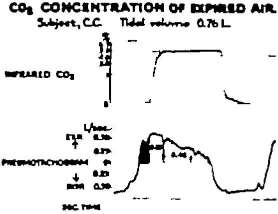
(Body Metabolism Represented by Flame)

TOTAL VENT. ml/min.	DEAD SPACE VENT ml/min.	ALVEOLAR VENT ml/min.	CO_2 OUTPUT ml/min.	ALVEOLAR CO_2 CONC. %
7,000	2,000	5,000	250	$\frac{250}{5000} \times 100 = 5\%$
NORMAL				
6,500	4,000	2,500	250	$\frac{250}{2500} \times 100 = 10\%$
ALVEOLAR HYPOVENTILATION				
12,000	2,000	10,000	250	$\frac{250}{10000} \times 100 = 2.5\%$
ALVEOLAR HYPERVENTILATION				

THE ALVEOLAR CO_2 CONCENTRATION IS A GOOD MEASURE OF THE DEGREE OF ALVEOLAR VENTILATION IN RELATION TO THE BODY REQUIREMENTS

DETAIL OF CO_2 CURVE

FAST PAPER SPEED



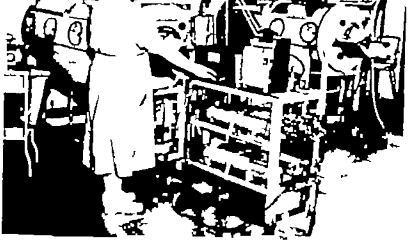
ALVEOLAR CO_2 RISES DURING EXPIRATION BECAUSE THE OUTPUT OF CO_2 IS CONTINUOUS WHILE THE LUNG VOLUME IS DIMINISHING

THE AREA UNDER THE VOLUME FLOW CURVE (PNEUMOTACHOGRAM) REPRESENTS VOLUME

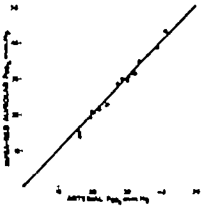
EACH EXPIRATION CONSISTS OF 3 PORTIONS

- 1st NO CO_2... PURE DEAD SPACE AIR (0.11 L)
- 2nd RAPIDLY RISING CO_2... DEAD SPACE AIR MIXED WITH ALVEOLAR AIR (0.23 L)
- 3rd SLOPING CO_2 PLATEAU... PURE ALVEOLAR AIR (0.42 L)

PORTABLE ANALYSER IN WARD



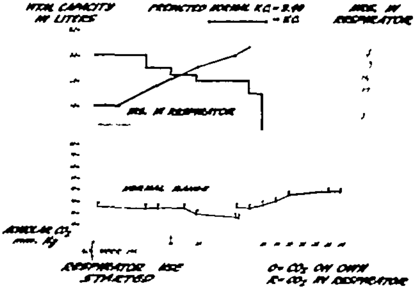
[illegible]



ACC[illegible] OF INFRARED ALVEOLAR CO_2 TENSION WAS ESTABLISHED BY SIMULTANEOUS COMPARISON WITH ARTERIAL CO_2 TENSIONS IN NORMAL SUBJECTS AND POLIOMYELITIS PATIENTS. THE ACCURACY IS MORE THAN ADEQUATE FOR CLINICAL USE

ABNORMAL DISTRIBUTION OF GAS AND BLOOD IN THE LUNG AS IS FOUND IN EMPHYSEMA MAY INTERFERE WITH THIS ACCURACY AND SPECIAL MANEUVERS MAY BE NECESSARY

[illegible]



B.S., 30 YEAR OLD ♀ ADMITTED TO L.A.G.H. CYANOTIC AND STUPOROUS TRACHEOTOMY PERFORMED AND TANK RESPIRATOR USE STARTED IMMEDIATELY

o

NOTE HIGH $P_{A_{CO_2}}$ BEFORE RESPIRATOR USE AND MODERATE HYPERVENTILATION IN THE RESPIRATOR

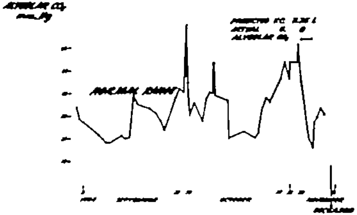
o

STEADY IMPROVEMENT OCCURRED WITH ONLY SLIGHT RESIDUAL PARALYSIS

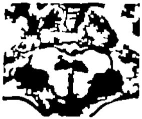
HYPO AND HYPERVENTILATION DUE TO POLIOMYELITIS

H.B., 30 YEAR OLD ♀ ADMITTED TO RANCHO LOS AMIGOS FROM ANOTHER HOSPITAL IN A TANK RESPIRATOR WITH

- A TRACHEOTOMY
- ANEMIA (8.5 gm. Hbg/100 ml)
- O VITAL CAPACITY AND PATCHY PULMONARY ATELECTASIS



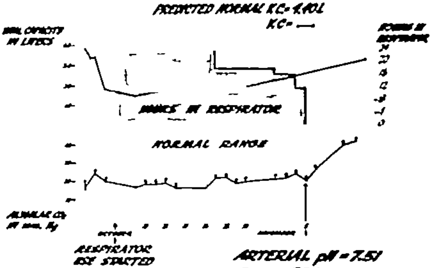
NOTE EPISODES OF UNDER VENTILATION RELATED TO ATELECTASIS OF THE LUNGS ALTERNATING WITH PERIODS OF OVER VENTILATION



CYSTIC AREAS SURROUNDED BY FOCAL NECROSIS IN THE RETICULAR AREAS OF THE PONS AND MEDULLA

HYPERVENTILATION DUE TO POLIOMYELITIS WITH ENCEPHALITIS

A.E 16 YEAR OLD ♂ ADMITTED TO L.A G.H WITH HYPERVENTILATION AND SWALLOWING DIFFICULTY

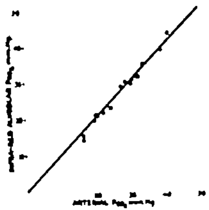


ALVEOLAR CO_2 WHILE ON AIR
ALVEOLAR CO_2 IN RESPIRATOR

ARTERIAL pH = 7.51
P_{CO_2} = 20.9 mm. Hg.
P_{ACO_2} = 20.0 mm. Hg.
O_2 CONTENT = 16.2 VOL.%
Hbg-O_2 SAT. = 100%

NOTE: HYPERVENTILATION CONTINUOUS IN AND OUT OF RESPIRATOR UNTIL THE DISEASE HAD RUN ITS COURSE CAUSE OF HYPERVENTILATION— ENCEPHALITIS; SOME ANXIETY PRESENT

[illegible]



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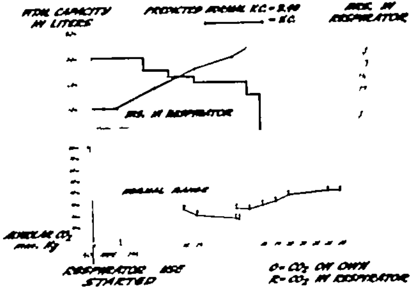
[illegible]



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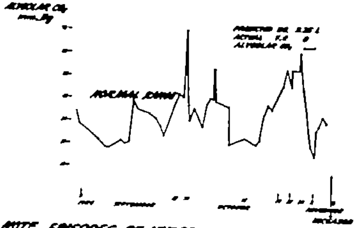

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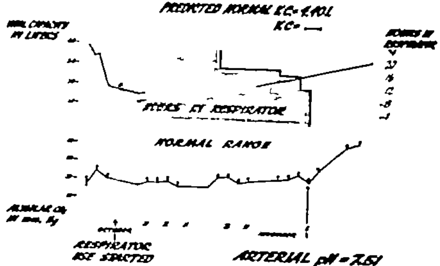


ALVEOLAR CO_2 WHILE OUT OF RESPIRATOR
ALVEOLAR CO_2 IN RESPIRATOR

ARTERIAL pH = 7.51
P_{aCO_2} = 20.9 mm. Hg.
P_{ACO_2} = 20.0 mm. Hg.
O_2 CONTENT = 18.2 VOL.%
Hb-O_2 SAT. = 100%

NOTE: HYPERVENTILATION CONTINUOUS IN AND OUT OF RESPIRATOR UNTIL THE DISEASE HAD RUN ITS COURSE CAUSE OF HYPERVENTILATION— ENCEPHALITIS; SOME ANXIETY PRESENT

HYPERVENTILATION ASSOCIATED WITH ANGINA PECTORIS

G.R., 62 YEAR OLD ♂ REFERRED TO THE PULMONARY FUNCTION LABORATORY BECAUSE OF

- DYSPNEA
- LIGHT-HEADEDNESS
- WEAKNESS
- PRECORDIAL ACHING

ALVEOLAR CO_2 IN mm Hg

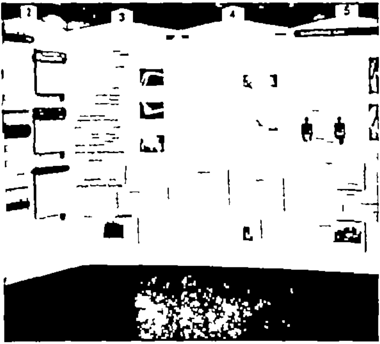
10 20 30 40

USUAL LEVEL OF VENTILATION

SPONTANEOUS HYPERVENTILATION WHILE RECALLING RECENT SUDDEN DEATH OF NEPHEW

VOLUNTARY HYPERVENTILATION ASSOCIATED WITH DIZZINESS, LIGHT HEADEDNESS, AND WEAKNESS

NOTE GRAPH DEMONSTRATES HYPERVENTILATION DUE TO ANXIETY PATIENT REFUSES TO ACCEPT THIS AS A CONTRIBUTING FACTOR IN HIS ILLNESS



The Use of Tube Feedings in the Nutrition of Critically Ill Patients.

GORDON M. MINDRUM, Cincinnati General Hospital, Cincinnati.

The exhibit demonstrates the use of tube feedings. Pictures and diagrams illustrate the types of tubing used and the methods of use. Graphs show temperature curves, weight, caloric intake, along with photographs and case histories, demonstrating the use of tube feedings in such conditions as acute and chronic infection, acute and chronic trauma, severe burns, neoplasms, mental disease, and acute kidney disease

NUTRITION OF CRITICALLY ILL PATIENTS

REGULAR DIET

HIGH PROTEIN FEEDING

HIGH FAT FEEDING

DAILY HIGH TEMPERATURE

DAILY LOW TEMPERATURE

1

1 GENERAL CONSIDERATIONS

2 INDICATIONS FOR HIGH FAT OR HIGH PROTEIN

3 NUTRITIONAL THERAPY

2

COMPOSITION OF FEEDINGS

④

PULMONARY COMPLICATIONS

⑥

[illegible]

⑦

GASTROINTESTINAL COMPLICATIONS

⑤

CAUTIONS

⑧

CONCLUSIONS

⑨

3

ILLUSTRATIVE CASE HISTORY No. 28966

A 34 year old White male was admitted September 28 1952 following an automobile accident. Injuries included:

- Fracture of left 2 3 4 ribs
- Fracture of left transverse processes of lumbar vertebrae 3 4 5
- Fracture of left pubic ramus
- Fracture of left ischium
- Fracture of left side of sacrum
- Compound comminuted fracture of left ulna
- Fracture of right radius and ulna
- Fracture of right lateral malleolus
- Compound comminuted fracture of left hip
- Basal skull fracture
- Severe brain contusion

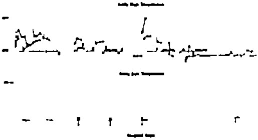
Complications included pneumonia cystitis and decubitus. In one month there were 51 pounds of weight loss and severe malnutrition. High caloric tube feeding produced weight gain, healing of decubitus and fractures, and increased resistance to infection.

Therapy: High fat feeding by tube

Roentgenograms of some of the injuries

WEIGHT IN POUNDS

TEMPERATURES

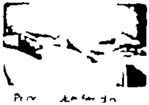


CALORIES PER DAY

4

ILLUSTRATIVE CASE HISTORY No. 189550

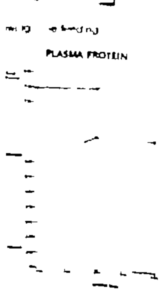
[illegible] ... On February 1955 ... 100 pounds ... 139 pounds ... 2000 and ... on February 24 1955



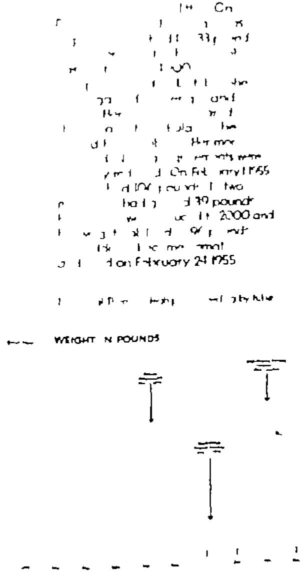
[illegible]

[illegible]

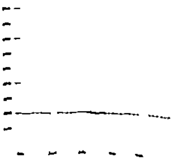
PLASMA PROTEIN



WEIGHT IN POUNDS



CALORIES PER DAY



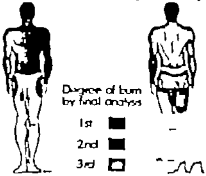
5

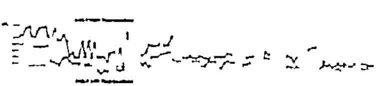
ILLUSTRATIVE CASE HISTORY No. 262621

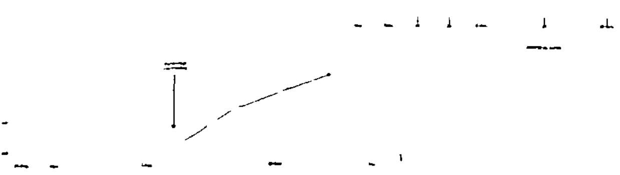
A 39 year old Colored male was admitted August 22 1952 for a burn involving 63% of his body surface In 47 days there was 50 pounds of weight loss, high fever infected burned surfaces severe emaciation decubitae and phychosis All attempts at skin grafting failed On October 9 1952 high fat feedings were begun Burned surfaces slowly developed healthy granulation tissue decubitae healed Mentation cleared In two months he gained 23 pounds Skin grafting was now successful He was discharged December 20, 1952 weighing 139 pounds He was working full time in March 1955 and weighed 163 pounds

Following Recovery

Nutritional Therapy Diet plus high fat feedings







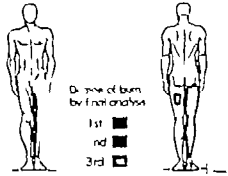
ILLUSTRATIVE CASE HISTORY NO 97026

A 9 ... old ... he was admitted October 5, 1954 with an 8 weeks old third degree b... of his left ... thigh ... leg. At his local hospital attempts at grafting ... extensive infection with resistant organ... He lost weight to 44 pounds from a pre burn ... of 64 pounds.

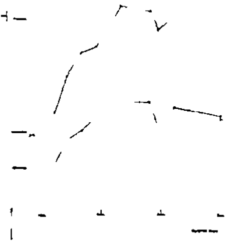
On admission to ... hospital he was toxic ... There were vitamin deficiencies. The ... was badly ... and foul smelling. The fascia ... muscles and knee capsule were exposed. There was hypoproteinemia. All therapy was directed ... nutrition and cleansing of the bur... High protein feeding by tube during the next month produced an average intake of 3770 calories per day ... 3.35 grams of prot... Weight and serum ... improved. ... seemed to increase and burned surfaces developed healthy granulation tissue. Skin grafting then became possible on November 28, 1954. Since that date there has been progressive improvement. On March 14, 1955 his weight was 60 pounds.

N... and Recovery (under ... of treatment)

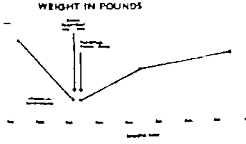
Nutritional Th... High ... feeding by ...



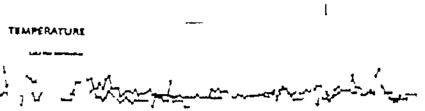
PLASMA PROTEINS



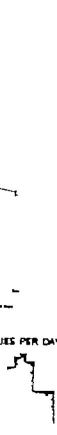
WEIGHT IN POUNDS



TEMPERATURE



CALORIES PER DAY



PRIMARY HYPERPARATHYROIDISM

The diagnosis of *primary hyperparathyroidism* requires the integration of

- CLINICAL SYMPTOMS
- ALTERATIONS IN THE METABOLISM OF CALCIUM AND PHOSPHORUS
- X RAY
- PATHOLOGY

Etiology

an overproduction of parathyroid hormone as a result of

SINGLE OR MULTIPLE ADENOMA*(S)*	*Usual*
DIFFUSE HYPERPLASIA	*Infreq ent*
CARCINOMA	*Very inf equent*
NODULAR HYPERPLASIA	*Rare*

Course

- CHRONIC
- DAMAGES KIDNEY SKELETON OR BOTH
- MAY BE FATAL UNTREATED
- SURGICALLY CURABLE IN MOST CASES

Clinical symptoms

HYPERCALCEMIA PER SE

polydipsia
polyuria
[illegible]

o ore io o sea
omiti g
abdomi al pain
[illegible]

hype salivatio

weakness

psychosis (rare)

RENAL CHANGES

stones or eph ocalcinosis

SKELETAL CHANGES

pain

deformity

fracture

tumor

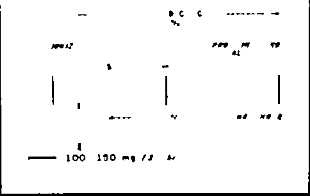
cyst formation

loose teeth

CALCIUM METABOLISM

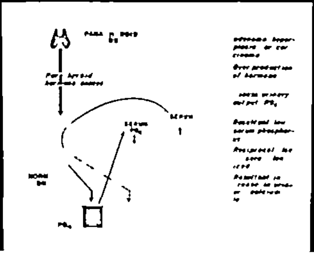
NORMAL CONDITIONS

DAILY DIETARY INTAKE = DAILY URINARY CALCIUM OUTPUT + FECAL OUTPUT



[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					0.8
[illegible]	[illegible]				200
[illegible]	[illegible]				10

PHYSIOLOGY IN PRIMARY HYPERPARATHYROIDISM



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an overproduction of parathyroid hormone as a result of

SINGLE OR MULTIPLE ADENOMA*(S)*	*Usual*
DIFFUSE HYPERPLASIA	*Infrequent*
CARCINOMA	*Very infrequent*
NODULAR HYPERPLASIA	*Rare*

Course

- CHRONIC
- DAMAGES KIDNEY SKELETON OR BOTH
- MAY BE FATAL UNTREATED
- SURGICALLY CURABLE IN MOST CASES

Clinical symptoms

HYPERCALCEMIA PER SE

polydipsia
polyuria
[illegible]

anorexia nausea
vomiting
abdominal pain
[illegible]

hypersali etio weakness psychosis (rare)

RENAL CHANGES

stones or nephrocalcinosis

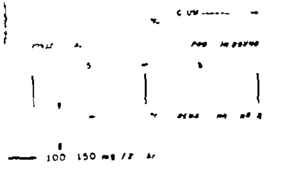
SKELETAL CHANGES

pain deformity fracture
tumor cyst formation loose teeth

CALCIUM METABOLISM

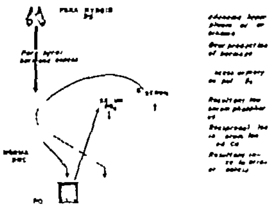
NORMAL CONDITIONS

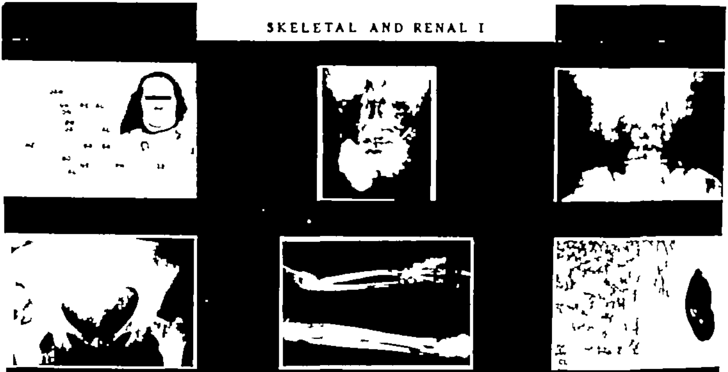
DAILY DIETARY INTAKE = **DAILY URINARY CALCIUM OUTPUT** + **FECAL OUTPUT**

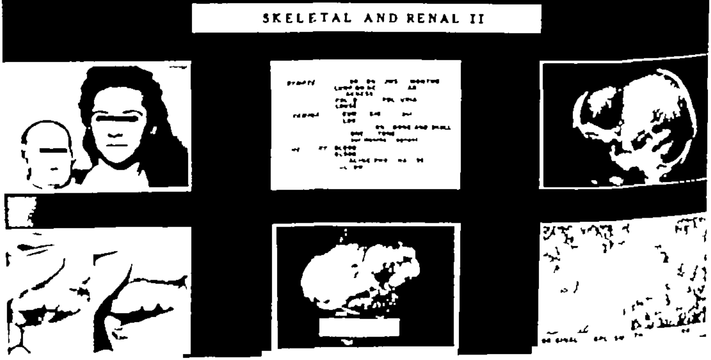


[illegible]

PHYSIOLOGY IN PRIMARY HYPERPARATHYROIDISM




SKELETAL AND RENAL I

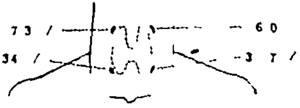

SKELETAL AND RENAL II

TREATMENT and POST OPERATIVE COURSE

Surgical considerations

PRIMARY HYPERPARATHYROIDISM CAN ONLY BE CORRECTED SURGICALLY

ANATOMICAL DISTRIBUTION OF PARATHYROID ADENOMATA



ABERRANT 12 /

[illegible] 43 %

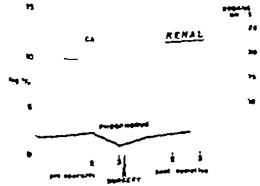
[illegible] thyroid 30 %

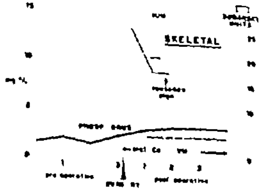
MULTIPLE 80 /

PRIMARY HYPERPLASIA IS CORRECTED BY REMOVAL OF THE MAJORITY OF HYPERSECRETING TISSUE

THE RARE CARCINOMAS REMAIN A PROBLEM BUT RE RESECTION IS OF VALUE IN CONTROLLING SYMPTOMS

Post operative course





RENAL DISEASE ▶ [illegible]

BONE DISEASE ▶ [illegible]

GASTRO-INTESTINAL & ELECTROLYTE ▶ [illegible] after surgical treatment ([illegible] of symptoms)

MEDICINAL MANAGEMENT OF FATTY ALCOHOLIC LIVERS

Comparison of Treatment by Diet Alone with Diet Plus Lipotropic Substances Based on Liver Biopsy and Liver Function Tests

Thaddeus D Labecki and Carroll L. Busby
Jackson Mississippi

Since the introduction of lipotropic substances to therapy a number of clinicians have found them of value in alleviating fatty liver of Laennec s cirrhosis and improving hepatic function At present there seem to be con flicting views as to whether lipotropic therapy has any advantages over the conventional high protein diet previously used

This study was undertaken to observe and evaluate the effectiveness of two methods of treatment of fatty alcoholic livers Serial liver punch biopsies (intercostal technique) liver function tests and serum protein analyses served as bases for diagnosis and comparison of therapeutic efficacy Accord ingly 30 in patients with Laennec s cirrhosis due to alcoholism were subjected to the following therapeutic regimens for a sufficiently long time (14 weeks to 26 months)

Regimen A—conventional high protein diet with 12 egg whites a day multivitamins placebo

Regimen B—intensive lipotropic therapy (Methischol*) moderate protein (not over 50 Gm daily) and moderate calorie diet.

Strikingly more dramatic results were obtained in every case when intensive lipotropic therapy was given although both therapeutic regimens did relieve fatty infiltration Representative photomicrographs of the liver punch biopsies in this series exhibited herewith demonstrate this point Special staining technique (Schiff) demonstrates increased glycogen in the liver parenchyma following intensive lipotropic therapy even when diet continued to be inadequate in protein Liver function tests and clinical signs also showed greatest improvement on lipotropic therapy

One of our patients with far advanced Laennec s cirrhosis reacted adversely to the high protein diet, sank into coma and died This case exemplifies the potential danger of hepatic coma as a result of intolerance to dietary protein which has been reported to occur in patients with cirrhosis of the liver (New England J Med 251 685 1954)

Early recognition of alcoholic cirrhosis is desirable and made possible by a complete liver profile consisting of liver punch biopsy liver function tests (bromsulphalein retention, thymol turbidity cephaline flocculation total and esterified cholesterol) and serum protein analysis

The intercostal approach to liver punch biopsy is a safe and simple diagnostic procedure, provided prothrombin time is normal.

*Methischol contains lipotropic substances [illegible] methionine [illegible] with [illegible] B and liver concentrate

CLINICAL MATERIAL

Thirty in patients observed

for 14 weeks to 26 months

Clinical and pathological diagnosis in each case was Laennec s Cirrhosis. Initial and follow up studies included

serial liver punch biopsy (intercostal technique)
- liver function tests
  - BSP (bromsulphalein retention)
  - thymol turbidity
  - cephalin flocculation
  - total and esterified cholesterol
  - protein pattern
    - albumin globulin A G ratio

THERAPY

Two therapeutic regimens have been compared

***REGIMEN A**

HIGH PROTEIN

Conventional high protein diet supplemented by cooked egg white (12 per day) skim milk and cottage cheese *ad lib* therapeutic multiple vitamin preparation and *placebo* *(lactose capsules)*

****REGIMEN B**

LIPOTROPIC THERAPY MODERATE PROTEIN

Moderate calorie diet (up to 2300 calories per day) containing a moderate amount of protein (not over 50 Gm. per day) with supplement of *lipotropic factors (Methischol)*

RESULTS

1 Both therapeutic regimens relieved fatty infiltration of hepatic parenchyma However strikingly more dramatic results were obtained in every case with Regimen B (lipotropic supplement — Methischol)

2 Decrease in liver size and increase in glycogen of the liver parenchyma were most striking following intensive lipotropic therapy, even when diet continued to be inadequate in protein

3 High protein adequate vitamin diet for 24 months plus alcohol withdrawal, gave partial relief of fatty infiltration Complete relief of fatty infiltration was later obtained by intensive lipotropic therapy for 8 weeks

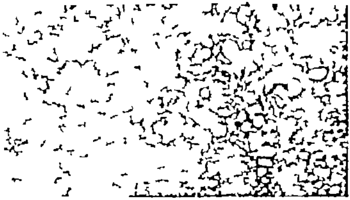
4 Liver punch biopsy, using intercostal approach, is a safe and simple diagnostic procedure provided prothrombin time is determined before every biopsy and corrected, if necessary

"LIVER PROFILE" AIDS DIAGNOSIS

A complete "liver profile consisting of punch biopsy liver function tests and serum protein analysis enables the clinician to arrive at an early diagnosis of alcoholic cirrhosis of the liver

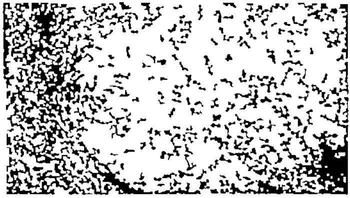
In 26 patients (87%), one or more liver function tests were abnormal with the following breakdown bromsulphalein retention 80%, thymol turbidity 15%, cephalin flocculation 50%, serum albumin less than 3 8.58 %, A-G ratio less than 1.5:50%, abnormal protein pattern 60% abnormally low serum total cholesterol and/or esterified cholesterol 20%

Liver punch biopsies in three alcoholic patients 1) before any treatment, 2) after very high protein diet, multivitamins and placebo (Regimen A) * 3) after intensive lipotropic therapy (Methischol) with moderate protein and caloric diet (Regimen B) ** Greatest improvement followed administration of Regimen B

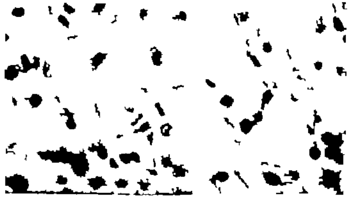


PRE-TREATMENT N.L., white male, age 44. Drinking whiskey 25 yrs., often one fifth per day. Liver hard, nodular on palpation, enlarged 7 cm. BSP 4% (45 min.) thymol turbidity 1.7 Maclagan units cephalin flocculation 1+ (Abundant glycogen) magnified 150x

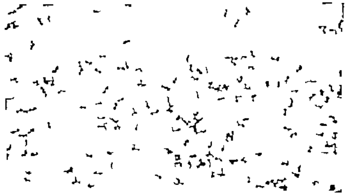
PRE-TREATMENT N.L. white male, age 44. Drinking whiskey 25 yrs. often one fifth per day. Liver hard, nodular on palpation, enlarge 7 cm. BSP 4% (45 min.) thymol turbidity 1.7 Maclagan units cephalin flocculation 1+ magnified 775



POST TREATMENT (REGIMEN A) N.L., white male, age 44. Four weeks on Regimen A including placebo. BSP 4% (45 min.) (Decreased amount of glycogen) magnified 160x



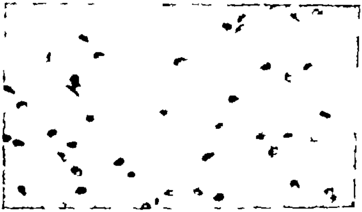
POST TREATMENT (REGIMEN A) N.L., white male, age 44. Four weeks on Regimen A including placebo. BSP 4% (45 min.) (Decreased amount of glycogen) magnified 775x



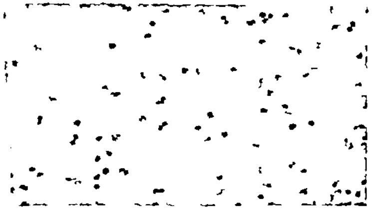
POST TREATMENT (REGIMEN B) N.L., white male, age 44 Five weeks on Regimen B (Methischol oral and parenteral) BSP 0% (30 min.) ("Abundant glycogen"). magnified 175

POST TREATMENT (REGIMEN B) N.L. white male, age 44. Five weeks on Regimen B (Methischol oral and parenteral). BSP 0% (30 min.) ("Abundant glycogen") magnified 775x

PRE-TREATMENT W.A., white female age 41. Drinking whiskey sinc ge of 13. Marked ascites. (Moderate amount of glycogen.) magnified 175

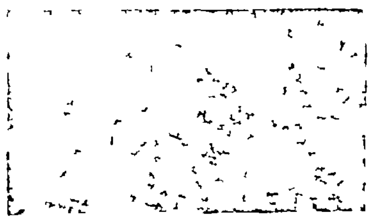


PRE TREATMENT W.A., white female age 41 Drinking whiskey since age of 13. Marked ascites. (Moderate mount of glycogen) magnified 775

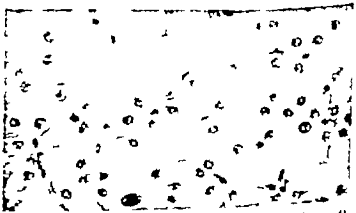


POST TREATMENT (REGIMEN A) W.A., white female, ge 41 Six weeks of Regimen A. (Small amount of glycogen in cytoplasm.) magnified 350x

POST TREATMENT (REGIMEN A) W.A white female, age 41 six weeks of Regimen A (Small amount of glycogen in cytoplasm) magnified 775

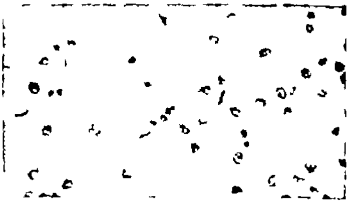


POST TREATMENT (REGIMEN B) W.A., whit female, age 41 six weeks of Regimen B. (Essentially normal mount of glyc gen magnified 175

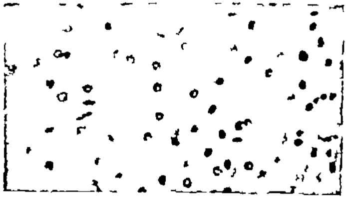


POST TREATMENT (REGIMEN B) W.A., whit female ge 41 Si weeks of Regimen B (Essentially normal mount of glycogen) magnified 775

PRE TREATMENT M.A.R., white male, age 48 drinking whiskey steadily for 10 years. BSP 37% (45 min.) magnified 775

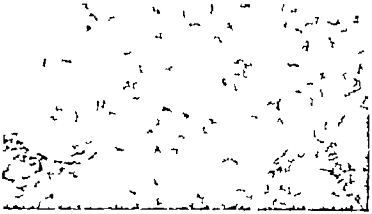


POST TREATMENT (REGIMEN A) M.A.R., white male, age 48 Six weeks of Regimen A including placebo. BSP 8% (45 min.) Some relief of fatty infiltration magnified 775



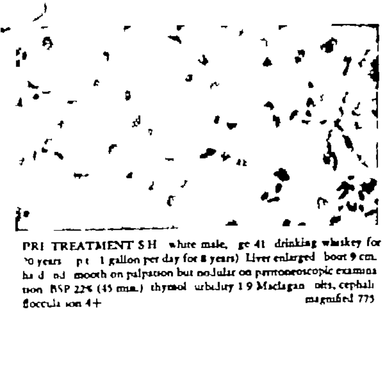
POST TREATMENT (REGIMEN B) M.A.R., white male, age 48. Four weeks of Regimen B. BSP 5% (45 min.) Marked relief of fatty infiltration. magnified 775x

Liver punch biopsies of three alcoholic patients with far advanced fatty infiltration of the liver placed on Regimen B show greatly reduced fatty infiltration and increased glycogen content. BSP thymol turbidity cephalin flocculation, serum protein and serum cholesterol showed improvement there was marked decrease in size of liver



PRE TREATMENT S H., white male, ge 41 drinking whiskey for 20 years (p t 1 gallon per d y for 8 years) Liver enlarged bout 9 cm. hard nd smooth on palpation but nodular on peritoneoscopic examination. BSP 22% (45 min.) thymol turbidity 1 9 Maclagan units cephalin flocculation 4+ magnified 175

POST TREATMENT (REGIMEN B) S H white male, age 41 Eight weeks of intensive lipotropic therapy (Methlachol) BSP 14% (45 min.) Improvement of liver on palpation. magnified 175x



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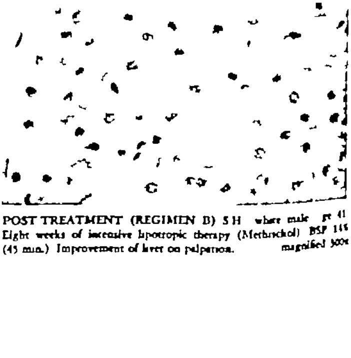
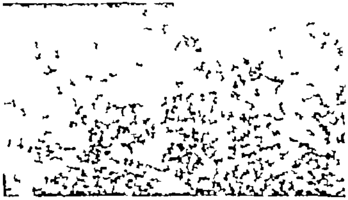


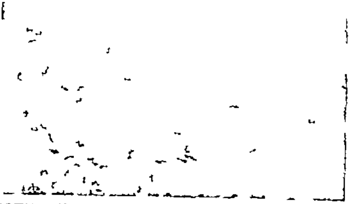
POST TREATMENT (REGIMEN B) S H white male ge 41 Eight weeks of intensive lipotropic therapy (Methachol) BSP 14% (45 min.) Improvement of liver on palpation. magnified 300x

PRE TREATMENT E.S., white male, age 42. Stained by the periodic acid leuco-fuchsin technique (Schiff's stain) moderate amount of glycogen. magnified 175

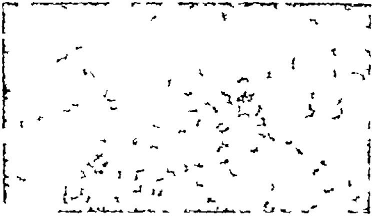
POST TREATMENT (REGIMEN B) E.S., white male, age 42. *Stained by Schiff stain approximately normal amount of glycogen.* magnified 175



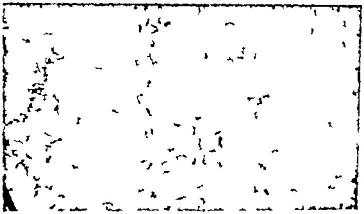
PRE-TREATMENT E.S. white male age 42 drinking whiskey for 15 years (up to one-fifth per 24 hours) Liver enlarged 7.5 cm. BSP 43%, (5 min.) 0% (30 min.) thymol turbidity 5.4 Maclagan units. magnified 175



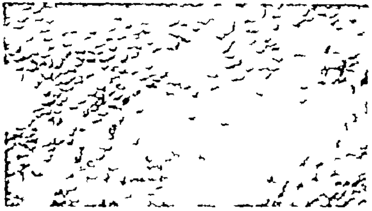
POST TREATMENT (REGIMEN B) E.S., white male, age 42. Seven weeks of Regimen B. BSP 24% (5 min.) 0% (30 min.); thymol turbidity 0.4 Maclagan units. magnified 175



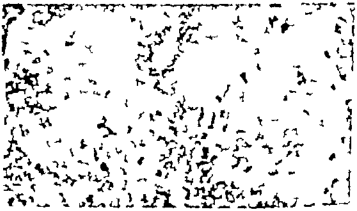
PRE TREATMENT M.A.Y. white male, age 55 drinking about 1 quart of whiskey per day for 15 years. Liver enlarged about 4 cm. BSP 56% (5 min.) 0% (30 min.) thymol turbidity 6.6 Maclagan units. magnified 175x



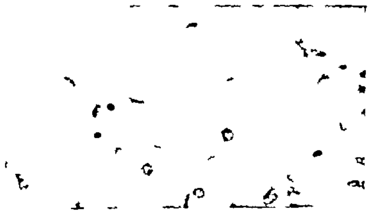
POST TREATMENT (REGIMEN B) M.A.Y. white male, age 55. Seven weeks of Regimen B. BSP 20% (5 min.) 5% (30 min.) thymol turbidity 0.6 Maclagan units. magnified 175



PRE TREATMENT M.A.Y. white mal ge 55 Periodic acid leuco-fuchsin technique moderate amount of glycogen. magnified 175



POST TREATMENT (REGIMEN B) M.A.Y. white male ge 55 Periodic acid leuco-fuchsin technique groups of cells containing abundant glycogen (other parenchymal cell contain only small amount) magnified 175



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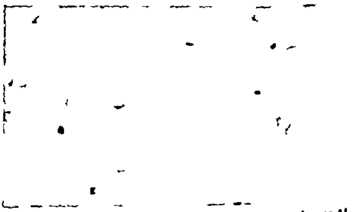
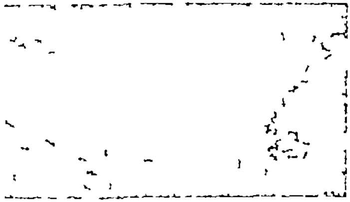


POST TREATMENT (REGIMEN B) M.A.Y. white male ge 55 Seven week of R gimen B BSP 20% (5 min.) 5% (30 min.) thymol turbidity 0.6 Maclaga unit magnified 175

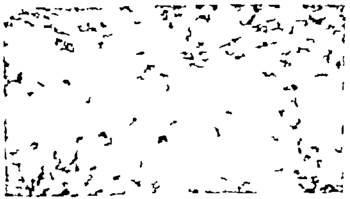
Liver punch biopsy in a case of Laennec's Cirrhosis which shows a false negative picture. Extensive pathology of the liver was revealed at autopsy This case exemplifies also the potential danger of a high protein regimen alone which appears to have contributed to death.

(as suggested by Schwartz, R. et al.: New England J M. 251·689 1954)

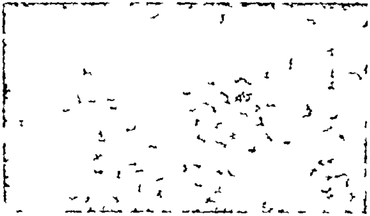
PRE TREATMENT P O white male, age 41 Narcotic addict and alcoholic for 23 years. BSP 24% (5 mi), 5% (30 min.) thymol turbidity 12 Maclagan units. Pathologist reported essentially normal liver
magnified 775



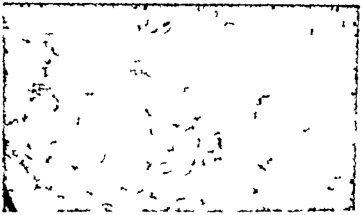
POST TREATMENT P O white male, ge 41 Biopsy from post mortem examination portal cirrhosis, latent H gh protei diet resulted in patient death
magnified 175x



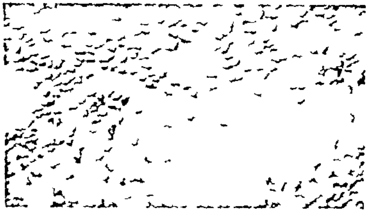
POST TREATMENT P O white male, ge 41 Schiff stai pathologist reported normal mount of glycogen High protein diet resulted in patient death
magnified 175



PRE TREATMENT M A Y white male, age 55 drinking about 1 quart of whiskey per day for 15 years Liver enlarged about 4 cm. BSP 36% (5 min) 0% (30 min) thymol turbidity 6.6 Maclagan units. magnified 175



POST TREATMENT (REGIMEN B) M.A.Y white male, age 55. Seven weeks of Regimen B BSP 28% (5 min) 5% (30 min.) thymol turbidity 0 6 Maclaga units. magnified 175



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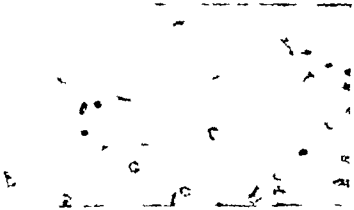

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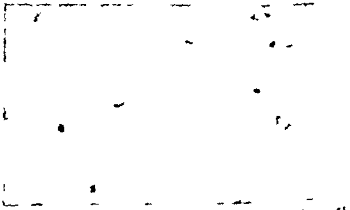

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Liver punch biopsy in a case of Laennec's Cirrhosis which shows a false negative picture. Extensive pathology of the liver was revealed at autopsy. This case exemplifies also the potential danger of a high protein regimen alone which appears to have contributed to death.

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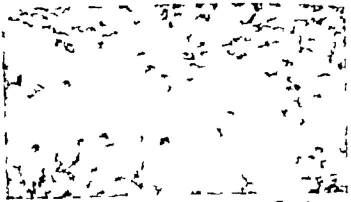


POST TREATMENT P.O. white male, age 41. Schiff stain. Pathologist reported normal amount of glycogen. High protein diet resulted in patient's death. magnified 175

First Recognized in 1931

Temporal arteritis was recognized as a new disease entity in the Journal of the American Medical Association of June 22, 1946, in an editorial based on reports of 38 cases reported in the world's literature It was first recognized and described by Horton, Magath and Brown in 1931 Since then, 105 cases have been observed at the Mayo Clinic

Early Stages Not Easily Recognized

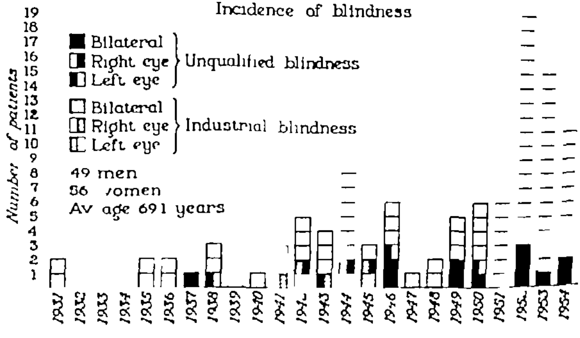
In the early stages of the disease usually there is no clue to its nature Severe headache, difficulty in chewing, and symptoms of mild to severe sepsis, may persist for weeks before the foremost clinical feature of the disease makes its appearance This feature is swollen, prominent and thrombosed temporal arteries

Loss of Vision A Serious Complication

Permanent loss of vision of one or both eyes, encountered by us first in 1937, is now recognized as the most serious complication Cortisone appears to be helpful in preventing blindness The cause of temporal arteritis is still obscure It is apparently a focal localization of some unknown disorder Occipital arteries or arteries elsewhere in the body may be involved

Temporal Arteritis and Residual Blindness

An Analysis of 105 Cases Seen at the Mayo Clinic
1931 - 1954



Clinical Features (Cont)

Etiology of Temporal Arteritis Is Not Known

Biopsy of involved arteries was performed in 62 per cent of cases

Cultures of resected vessels special viral studies and inoculation of guinea pigs rats dogs and rabbits gave negative results

Microscopic sections of temporal arteries were examined for Mycobacterium tuberculosis and Treponema pallidum and fungi with negative results

Cultures of blood and cerebrospinal fluid and agglutination tests for typhoid and paratyphoid fever brucellosis and tularemia were negative

Standard serologic tests were also negative

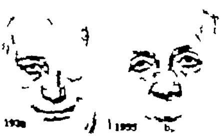
Fever, Anemia, Mild Leukocytosis *And a High Sedimentation Rate* Characterize the Clinical Course of the Disease

A 65-year-old woman with temporal rteritis First case observed t the Mayo Cli i

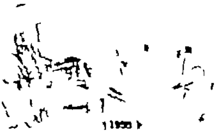
Bilateral temporal arteritis in a 65-year-old man In this case complete relief of headache followed resection of the involved arteries In 62 per cent of our patients the involved arteries have been resected

Prognosis

The disease is usually not fatal and tends to run a self-limited course of 4 to 30 months Only one patient died while under treatment Some patients have lived as long as 15 to 17 years after recovery from this illness



A 65-year-old woman with bil teral temporal arteriti became blind in the left eye ( ); same patient 17 years later still blind in the left eye but well and active (b)



A 71-year-old man with bilateral temporal arteriti did not become blind ( ); same patient 10 years later good health and with good eyesight (b)

A 67-year-old woman bilateral temporal had no visual involvement patient 15 years) for good health (b)

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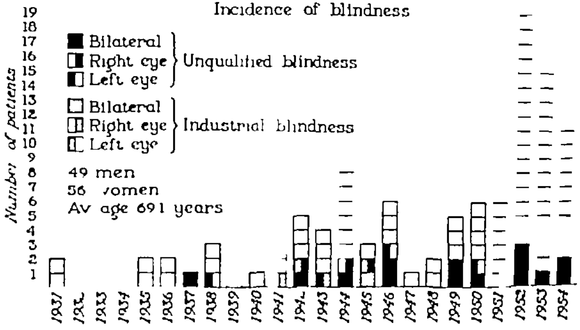

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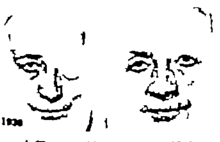

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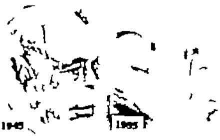

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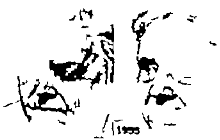
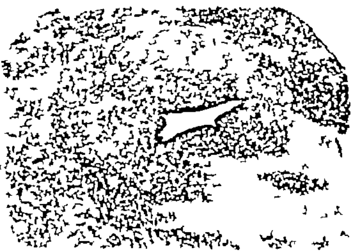


A 67 year-old woman with bilateral temporal arteritis had no visual ( ) patient good

Temporal Arteritis is a Subacute Granulomatous Stenosing Arterial Disease

Histopathologically focal medial necrosis and the occurrence of "giant cell granuloma in relation to a disorganized internal elastic lamella are almost constant findings Necropsy data are meager but reveal similar granulomas widely scattered strictly focal and usually limited to large peripheral arteries The salient microscopic features of the diseased vessels are shown below



The Lumen

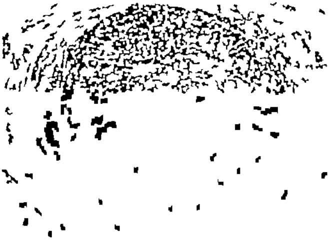
The lumen is reduced to a mere slit In 10 per cent of cases thrombus occludes the vessel In no other arterial disease is the current so compromised without actual thrombosis

Typical Intimal Lesion

Severe thickening from proliferation of young fibroblasts in a "mucoid matrix Foci of subacute inflammatory cells occur chiefly in apposition to areas of medial necrosis

The Media (Inner Zone)

Focal necrosis subacute inflammation and giant cells produce granulomas near elastic lamella Intramural aneurysms sometimes seen



Internal Elastic Lamella

Prominent features are focal necrosis fragmentation and attempts at reduplication Bits of elastic tissue are being engulfed by giant cells Linear calcification in 20 per cent of cases

Pathology (Cont)

The Media (Outer Zone)

Tempo of inflammatory reaction here fading and zonal necrosis not often observed Foci of interstitial hemorrhage in 10 per cent Scattered eosinophils occasionally noted

The Adventitia

Spotty perivasculitis of vasa vasorum Occasional contact phlebitis of venae comites Fibrosis about vessels and nerves responsible for edema and pain

Lesions Confused With Temporal Arteritis

Periarteritis nodosa

An acute panarteritis with polymorphonuclear leukocytes massive fibrinoid necrosis secondary thrombosis and aneurysm formation Lesions chiefly visceral and involve small vessels A fatal disease of young patients

Specific arteritides (tuberculous and syphilitic)

Involvement of vessels secondary rather than primary Production of granulomas with giant cells not predilective for vessel walls

Wegner's granulomatosis

Necrotic lesions of upper part of respiratory tract universal pulmonary involvement and frequent association of renal lesions with clinical uremia are the salient features rather than arteritis itself

Thromboangiitis obliterans

Confinement principally to males and affecting the large vessels of distal of lower extremities Basically a very chronic thrombosing disease of ve well as arteries Giant cells rare and elastic lamella intact

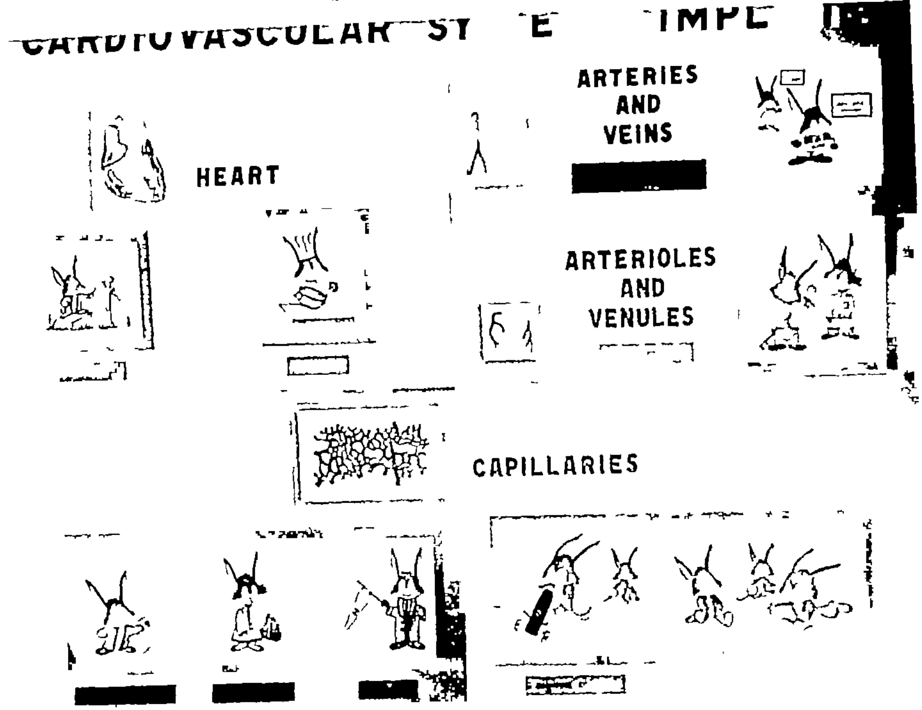
SECTION ON LARYNGOLOGY OTOLOGY AND RHINOLOGY

CERTIFICATE OF MERIT

The Small Blood Vessels of the Spiral Ligament and Stria Vascularis of Mammals.

FRANCIS L. WEILLE, JOHN W IRWIN, HERBERT C. MANSMANN JR., MARY GILCHRIST and SAMUEL R. GARGANO, Massachusetts General Hospital Boston.

Charts, posters, and pictures emphasize the importance of small blood vessels (arterioles, capillaries, and venules) in mammalian physiology Photographs demonstrate a method of studying the minute blood vessels of the spiral ligament and stria vascularis of living guinea pigs. Posters, charts, and pictures discuss some otological problems that may depend on disorders of the circulation of the inner ear Slides show the blood vessels of the spiral ligament and stria vascularis.


HEART
ARTERIES AND VEINS
ARTERIOLES AND VENULES
CAPILLARIES

OPERATIVE TECHNIQUES AND EQUIPMENT

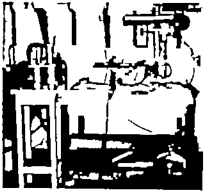
Anesthetized guinea pig.

Tracheal cannula—insufflation of 100% oxygen under pressure to suppress respiratory movements.

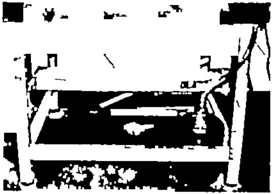
Removal of pinna.

External auditory canal.

Cochlea.



Experimental equipment.

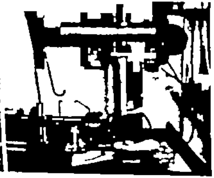


Steel pa with dral adjustable top and table.

Squash balls nder steel pa t cut dow vibration.

[illegible] chamber under table leg to lessen vibration.

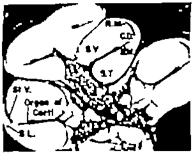
Preparation of fenestra of cochlea. [illegible]



Projection lamp holder, cooling fan, quartz rod holder, micromanipulator and guinea pig.

Observation of spiral ligament.

Photographing blood vessels of spiral ligament.



S.V Scala vestibuli. R.M. Reissner membrane. C.D Cochlear duct. B.M. Basilar membrane. S.T Scala tympani. S.L. Spiral ligament. St.V Stria vascularis.

Diagram of vessels seen in spiral ligament of living guinea pig.

Low magnification; fenestra and blood vessels of spiral ligament.

Branching arterioles of pper spiral ligament.

Branching rterioles of pper spiral ligament, pigmented cells, rea of stria ascularis.

Branching arteriole: arteriovenous arcade: venules.

Arteriovenous arcade: venules.

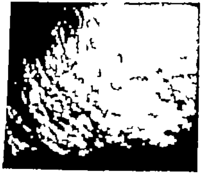
Branching arteriole; capillaries of stria vascularis.

Arteriole; rteriovenous rcade: venules: capillaries of stria vascu laris.

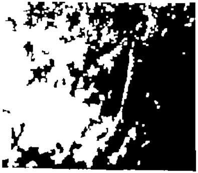
Venules; capillaries of stria as- cularis.

Arteriole and upper spiral ligament

A teriole nd apillaries, pper spiral ligament.



Capill ies of upper spi l ligament



Arteriole nd capillaries, upper spiral ligament.

POSSIBLE REASONS FOR STUDY OF MICROCIRCULATION OF INNER EAR OF LIVING ANIMAL

1 A BETTER UNDERSTANDING OF ANATOMY PHYSIOLOGY AND CHEMISTRY OF THE INNER EAR

2 KNOWLEDGE OF NUTRIENT REQUIREMENTS OF THE ORGAN OF CORTI

3 INFORMATION OF THE PATHOGENESIS OF MÉNIÈRE S DISEASE AND OF HEARING LOSS

SUITABLE PHYSIOLOGICAL AND CHEMICAL TECHNICS SHOULD BE COMBINED WITH THIS TECHNIC FOR ACCOMPLISHMENT OF THE ABOVE AIMS

1 MICROCHEMICAL STUDIES OF OXYGEN POTASSIUM SODIUM PROTEIN ETC. OF THE BLOOD IN THESE VESSELS AS WELL AS THE FLUID OF ENDOLYMPH

2 MEASUREMENTS OF PRESSURES IN THESE VESSELS AND IN THE COCHLEAR DUCT

THE MORPHOLOGICAL CHARACTERISTICS OF THESE SMALL BLOOD VESSELS CAN BE STUDIED BY OTHER METHODS

1 - HISTOLOGICAL

a. SHAMBAUGH G.E.: THE DISTRIBUTION OF BLOOD VESSELS IN THE LABYRINTH OF THE EAR OF SUS SCROFA DOMESTICUS CHICAGO UNIVERSITY OF CHICAGO PRESS 1903 VOL 10

b. SMITH C.A. CAPILLARY AREAS OF THE COCHLEA IN THE GUINEA PIG LARYNGOSCOPE 61 1073 1095 1951

2. INTRAVASCULAR PRECIPITATION OF LEAD CHROMATE

a. WILLIAMS T WALLEY JR. THE VISUALIZATION OF VERTEBRATE CAPILLARY BEDS BY INTRA-VASCULAR PRECIPITATION OF LEAD CHROMATE, ANAT REC. 100: 115 126 1948

PREPARATIONS UNDER THE MICROSCOPES SHOW THE VASCULAR BEDS OF THE COCHLEA OF A CAT THESE SECTIONS WERE MADE BY —

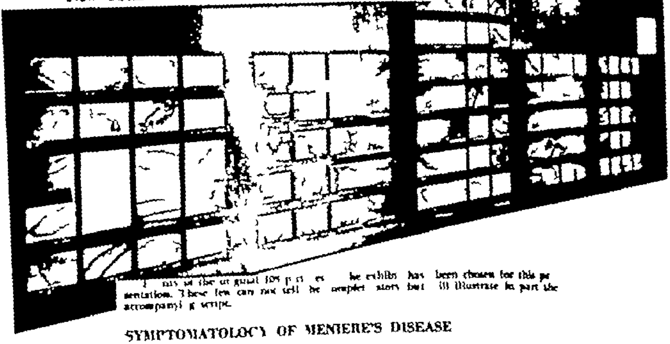
DR T W WILLIAMS PROF OF ANATOMY
DEPARTMENT OF ANATOMY
SCHOOL OF MEDICINE
WEST VIRGINIA UNIVERSITY
MORGANTOWN WEST VIRGINIA

DR. WILLIAMS HAS GRACIOUSLY CONSENTED TO THEIR USE IN THIS EXHIBIT

Menière's Disease: New Theory for the Correlation of Its Pathology to the Symptomatology

HONORABLE MENTION

JULIUS LEMPERT and DOROTHY WOLFF Lempert Institute of Otology and Lempert Research Foundation Inc., New York.



[illegible] nts of the original 105 pictures [illegible] the exhibit has been chosen for this presentation. These few can not tell the complete story but will illustrate in part the accompanying script.

SYMPTOMATOLOGY OF MENIERE'S DISEASE

As a rule, Meniere's disease is monaural. It is characterized by unpredictable paroxysmal attacks of severe vertigo accompanied by tinnitus and followed by progressive irreversible cochlear nerve damage.

Ever since Hallpike reported that distention of the cochlear duct and the absence of normal soft perisaccular connective tissue were the most significant pathological postmortem findings in Meniere's disease it has been more or less generally accepted that Meniere's symptom complex is caused by either hypersecretion or poor resorption of endolymph. Meniere's disease is now referred to in the literature as endolymphatic hydrops.

The only evidence of hydrops of ductus cochlearis is the distention of Reissner's membrane. No concrete histological evidence has yet been demonstrated that the hydrops within the ductus cochlearis actually represents either a hypersecretion of endolymph or an impeded resorption of normally secreted endolymph or both a hypersecretion and impeded resorption of endolymph.

It seems quite obvious that neither endolymph hypersecretion nor poor resorption of normal endolymph secretion can be logically held responsible for Meniere's symptom complex.

If the cochlear duct distention observed in Meniere's disease is caused by hypersecretion of normal endolymph, how do we explain the fact that the stria vascularis—which is assumed to be the source of endolymph secretion—is invariably observed to be atrophied in microscopic sections of the temporal bones from cases of Meniere's disease. Hypertrophy of the stria vascularis has never been reported.

The fact that both the presence of normal and atropic perisaccular connective tissue have been observed in the presence of cochlear duct distension, and also the fact that atrophic perisacular tissue has been observed in an otherwise normal ear would tend to discredit the th[eory] that the cochlear duct distention is strictly the result of impeded re[sorp]tion of the norm[a]lly secreted endolymph

The attacks of vertigo have never been arrested by destruction of the cochlear duct, but only by destruction of the vestibular labyrinth.

The paroxysmal nature of the attacks in Meniere's disease is still to be explained. No one has yet shown why—if hypersecretion of endolymph is the cause of the disease—the vertigo reaches the height of its intensity only during these paroxysms. Neither has anyone explained how poor absorption of endolymph due to atrophy of perisaccular tissue can be held responsible for the occurrence of Meniere's symptom complex in paroxysms.

Since the primary symptoms are vestibular we should expect to find the primary pathological changes in the vestibular system.

Embryologically the inner lining of the endolphatic labyrinth is derived from ectoderm

Vesiculation described by Hallpike but stated by him to be of no significance we believe to be the important pathological change

Production and accumulation of toxic fluid by the epithelial lining of the membranous canals are the factors involved

HISTOPATHOLOGY

The pathological findings are primarily vestibular

1 Vesiculation of the epithelial lining of the semicircular canals.

Rupture of the vesicles as surface tension is built up and gives way

3 Toxic fluid is thus poured into the canals and irritates the end-organ producing the sudden unpredictable attack of dizziness.

4 Cystic degeneration of vestibular end organs gradually occurs with repeated attack

5 Edema along the nerve fibers of the vestibular nerve.

6 Granular degeneration of the nerve fibers

Local anemia of red blood cells

Secondary pathological findings are cochlear

1 Distention of Reissner membrane which may rupture

Atrophy of stria vascularis

3 Liquefaction necrosis of organ of Corti

Ruptured cumulative vesicles which protrude into the lumen of the endolymphatic labyrinth and pour their toxic fluid into the lumen can now be logically held responsible for all symptoms of Meniere's disease

The fact that epithelial vesiculation was found in biopsied material as well as in autopsy material is sufficient proof that the epithelial vesiculation observed is not the result of postmortem degeneration per se

Furthermore the fact that it is often observed postmortem to exist unilaterally instead of bilaterally is proof sufficient that vesiculation is not a normal histologic feature It is also noteworthy that epithelial vesiculation within the vestibular labyrinth of the Rhesus monkey has been observed only in one out of more than hundred experimentally fenestrated Rhesus monkey ear This histologic finding in the left ear plus the fact that the right ear in that same monkey showed no sign of epithelial vesiculation, is in itself sufficient proof that epithelial vesiculation when present cannot be considered as a normal finding and devoid of pathological significance

In further substantiation of our belief that epithelial vesiculation of the inner lining of the vestibular membranous labyrinth is of pathological significance in Meniere disease is the interesting observation that in the one and only monkey ear in which epithelial vesiculation

was found histologic evidence of cochlear duct distention was also present. The other ear was found to be normal

The distention observed histologically in the endolymphatic system is the result of excess pressure from the vesiculation and toxic fluid production This distention occurs most prominently in Reissner s membrane because this is the thinnest wall of the endolymphatic system

The pressure of the contaminated endolymph takes the course of least resistance and therefore distends the cochlear duct and bulges or ruptures the delicate Reissner s membrane.

ETIOLOGY OF MENIERE'S DISEASE

On the basis of our observations made as a result of our research study we believe that Meniere s disease is a chronic, progressive herpetic neuritis of the vestibular labyrinth of either toxic or trophic origin.

The theory that Meniere s disease is primarily a disease of the vestibular labyrinth and that the cochlear pathology and symptoms are sequalae of the vestibular disease is herewith presented with histological evidence as proof thereof.

We propose the theory that an attack of Meniere s symptom complex is due to the rupture of one or more vesicles with the release of a toxic fluid whose chemical constitution differs from that of the normal endolymph into the lumen of the endolymphatic membranous labyrinth The size and number of vesicles rupturing at one time determine the severity of the attacks. The paroxysmal nature of this disease is due to the continued formation and periodic rupture of these vesicles.

It is also our belief that epithelial vesiculation of the inner lining of the vestibular membranous labyrinth is always pathological whether or not it is accompanied by Meniere s symptom complex. We recognize the fact that the degree of symptomatology may depend upn the degree of vesiculation that has taken place. Minor degrees of vesiculation may account for the transient vertigo so common after the age of 40

All the symptoms of Meniere s disease can be explained as a result of the contamination of the endolymph by this vesicular fluid. The violent vertigo is due to the hyerexcitability of the crista by the contaminated endolymph and not to the increase in fluid pressure

By accepting ep thelial esiculation as part of the pathological entity in Meniere s disease, a much more plausible correlation of Meniere s symptom complex to the pathology is made possible than ever before.

This suggests that Meniere disease is primarily a disease of the vestibular labyrinth.

The cumulative loss of hearing during the course of the disease is due to progressive damage to the organ of Corti by the repeated contamination of the endolymph.

The tinnitus is the result of stimulation of the organ of Corti by the contaminated endolymph.

Section of the vestibular fibers of the eighth nerve which does nothing to prevent endolymph hypersecretion or to improve endolymph resorption does, nevertheless, arrest the paroxysmal attacks of vertigo and also stops the f rther impairment of cochlear nerve function from manifesting itself in paroxysms This fact is suggestive that Meniere s disease is pri marily a disease of the vestibular labyrinth and also that the pressure of the cochlear duct distention cannot be held responsible for the symptomatology

Detail showing clear globules within the acti[?] nuclei of the epithelium. Many nuclei show amoeboid shapes [a]nd later become necrotic. (W. M. 56 years, #2887 B-4, Sl. 5 Sec. 2.)

Detail of [n]ucleus [of] ... [v]esiculated ... Not[e] three or fou[r] minute globules [in t]his [n]ucleus (righ[t]) [w]hich has exuded [a] large [v]esicle. (W. F. 60 [y]ears, #7704, Sl. 1, Sec. 1.)

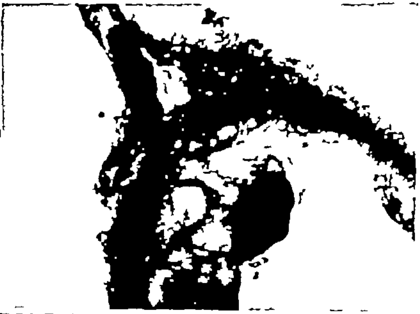
Detail of an enlarged [v]esicle formed by coalescence of single globules. Sooner or later this ruptures. (W. M. 45 years, #1955, Sl. 5, Sec. 4.)

Portion of membranous semicircular canal showing both calcificated and normal areas within its inner lining. (W.M., 23 years, #1933 Sl. 7)

Detail of vesicular [illegible] necrotic nuclei lining [illegible] the lumen. (W.M. [illegible] B 2, Sl. 1)

Vesiculation is definitely not the result of mechanical trauma. Note that it is not present in the region of the *sharp* bend of the canal. (W.M. 60 years #2070, B 6, Sl. 2, Sec. 1)

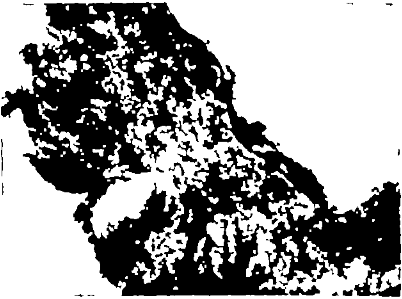
Large cum lath e esicle of chronic type I the ct of rupturing. Surface tension is obviously high except t this one point. (W. M 80 ears. #2490 SL Sec. 2.)



Granular precipitat within canal lumen as result of ruptured co m latn esicles (W. M. 80 years # 190 SI Sec 2.)

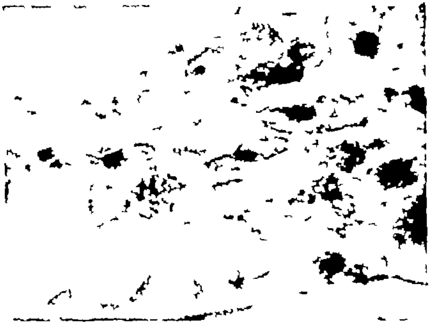
Detail showing n empty canal running parallel to the calculated canal. The esicle suggests either colloid or concret t formation. W. M. 46 years. #2772. SL 7 Sec.)

Advanced cystic degeneration of a macula. Note the floccular substance within the cysts and the presence of blow pigment. (W.M 57 years, #1905 Sl. 10)



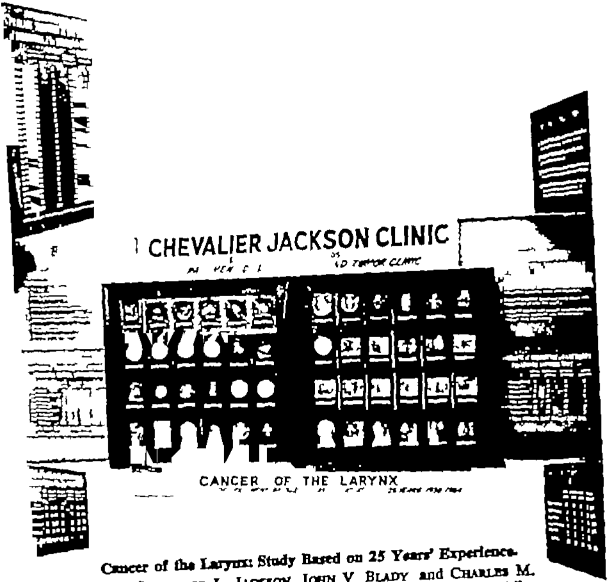
Macula and base of crista showing nerv fibers passing toward sensory epithelium. Small round cell infiltration is present. (W.M 4 ears, #1905 Sl. 4 Sec. 1)

Detail showing coagulation of protoplasm of nerv sheath and nerve axone in the pathological area. (#1905 Sl. 4 Sec. 1)



Note the nucleus with prominent nuclear membrane on border of large cyst in end-organ (upper field) (W.F. 63 years, #2020, Sl. 2, Sec. 4.)

In the end-organ (planum semilunatum) the pathological change takes the form of cyst production. Mucoid particulate matter occurs in the cyst. (W.M. 48 years, #[illegible] Sl. [illegible] Sec. 1.)



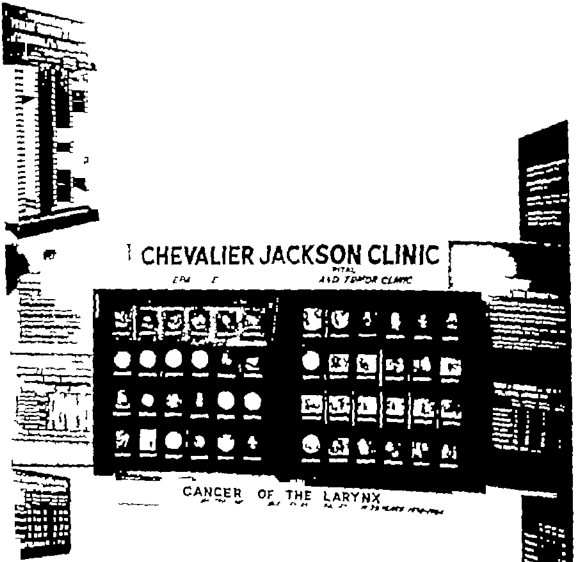
Cancer of the Larynx: Study Based on 25 Years' Experience.

CHEVALIER L. JACKSON, JOHN V BLADY and CHARLES M. NORRIS, Temple University School of Medicine, Philadelphia.

The exhibit shows transparencies of indirect and direct laryngoscopic views and operative specimens and the varied appearances of carcinoma of the larynx and laryngopharynx. Criteria for the selection of treatment are to be presented in relation to end-results. Management of "precancerous" lesions as well as early and advanced cancer is included.

Not the nucleus with prominent nuclea membrane on border of large cyst i end-organ (upper field) (W.F 65 years. #9020 Sl. – Sec. 4.)

I he end-orga (planum semi lunatum) he pa hological change takes he form of cystic production. M no particula matter occurs he cysts W.M 46 years. #7777 Sl Sec 1.)



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PRIMARY TREATMENT IN 1022 CASES of CARCINOMA of the LARYNX 1930-1954 inc

	PARTIAL * LARYNGECTOMY	LARYNGECTOMY	LARYNGECTOMY SIMULTANEOUS RADICAL NECK	IRRADIATION
1930	7	15	0	0
1931	5	10	0	1
1932	8	[illegible]	0	1
1933	14	5	0	4
1934	[illegible]	12	0	4
1935	[illegible]	12	[illegible]	[illegible]
1936	7	11	0	9
1937	14	11	0	9
1938	5	5	0	13
1939	12	22	0	7
1940	11	16	0	6
1941	12	9	[illegible]	20
1942	6	[illegible]	0	14
1943	13	5	0	13
1944	[illegible]	[illegible]	0	[illegible]
1945	[illegible]	13	2	13
1946	23	[illegible]	0	[illegible]
1947	21	23	0	[illegible]
1948	[illegible]	[illegible]	0	24
1949	22	20	0	19
1950	20	21	7	16
1951	25	[illegible]	5	12
1952	27	13	9	[illegible]
1953	19	22	9	10
1954	23	17	14	11
TOTALS	[illegible]	352	46	266

* [illegible]

FIVE-YEAR SURVIVALS INCLUDING SALVAGE FOLLOWING RECURRENCE and /or METASTASIS

	DET. CASES	5 YR. SURVIVAL FOLLOWING PRIMARY Rx	RECURRENCE and/or METASTASIS	5 YR. SURVIVAL FOLLOWING FURTHER Rx	TOTAL 5 Yr. SURVIVAL INCLUDING Rx of REC / MET.
Partial LARYNGECTOMY	[illegible]	[illegible]	26	[illegible]	190 91%
LARYNGECTOMY	206	131 64%	75	7	[illegible] 67%
IRRADIATION	179	73 40%	106	11	[illegible] 47%
TOTALS:	593	[illegible] 65%	207	26	412 69%

FIVE YEAR SURVIVAL RATE (412/593) 69%

INDICATIONS for PARTIAL LARYNGECTOMY

1. Cancer of one cord limited to middle third, with free motility (laryngofissure)
2. Cancer of one one cord reaching anterior extremity but not posterior. (laryngofissure-anterior commissure technic)
3. Cancer of both cords involving anterior commissure but no posterior extremity (partial frontal laryngectomy)
4. Cancer of epiglottis early cases-limited lesions (partial horizontal laryngectomy-Alonso)
5. Cancer of pyriform sinus (partial vertical laryngectomy-Alonso)

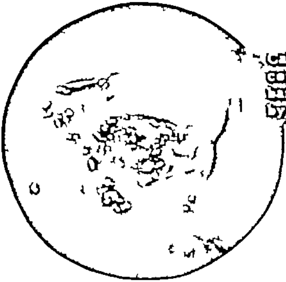
TREATMENT of RECURRENCE and/or METASTASIS FOLLOWING PARTIAL LARYNGECTOMY

	TOTAL CASES	DETERMINATE CASES	DEAD OF DISEASE	5 YEAR SURVIVAL
2nd PARTIAL	2	2	0	2
2nd PARTIAL WITH LARYNGECTOMY	1	1	0	1
LARYNGECTOMY	4	4	1	3
LARYNGECTOMY AND X RAY	3	1	1	0
NECK DISSECTION	1	1	1	0
LARYNGECTOMY AND RADON	1	0	0	0
X RAY OR RADIUM	9	8	6	2
UNTREATED OR TREATED ELSEWHERE	4	4	4	0
TOTALS	25	21	13	8

FIVE YEAR SURVIVAL RATE (Salvage) 8/21=38%

[illegible] (C[illegible] technic) [illegible] left [illegible]

Lesion of [illegible] excised by laryn[illegible] technic). Right cord and [illegible] along with underlying portion of thyr[illegible]



Carcinoma [illegible] cord, ventric[illegible] band, with underly[illegible] excision by laryngofissure (C[illegible] technic).

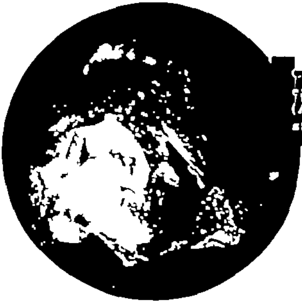
Lesion of anterior commissure and anterior subglottic region, excised by partial frontal laryngectomy.

Carcinoma [illegible] Partial laryngectomy including [illegible] of left cord [illegible] thyroid mem- [illegible]

[illegible] Partial [illegible] includ- [illegible]

Typical excision of cordal lesion reaching anterior commissure. Partial [illegible] anterior end of [illegible] band [illegible]

Carcinoma [illegible] two-thirds of right cord [illegible] commissure. Excised [illegible] thyroid membrane) with anterior third of left cord and band.

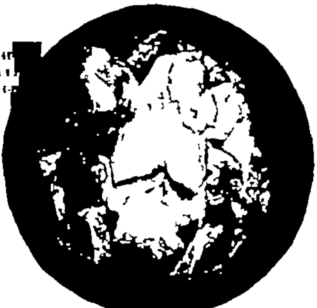


Carcinoma of laryngeal surface of epiglottis, excised by [illegible] (Alonso) with [illegible] stoma. Living and well after three years.

Carcinoma of [illegible]glottis, recurrent [illegible] previously. Excised by partial horizontal laryngectomy [illegible] technic.

Extensive [illegible] carcinoma in a patient with [illegible] tuberculosis. [illegible] evidence of tuberculosis in [illegible] specimen.

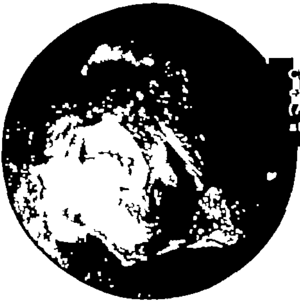
Large [illegible]
fold. [illegible]
vallecul [illegible]



Lesion of left pyriform sinus - lateral wall [illegible] laryngofissure 4 years previously, no recurrence on interior of larynx.

Laryngectomy for undifferentiated carcinoma [illegible] irradiation. Extensive [illegible] Subsequent metastasis to [illegible]

Carcinoma of right vocal cord with fixation and [illegible]. Laryngectomy without neck dissection (no palpable nodes).



[illegible] (Alonso) [illegible] stoma. Living and well after three years.

Carcin[illegible] epiglottis, recurrent follow[illegible] previously. Excision by partial horizontal laryngectomy (Alonso technic).

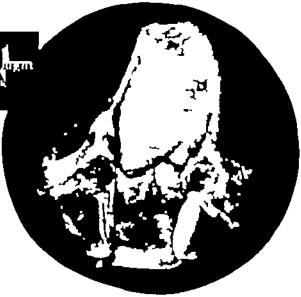
Extensive glottic [illegible] a patient with [illegible] tuberculosis. [illegible] tuberculosis [illegible]

Unusual [illegible] glottic origin of carcinoma. [illegible] to [illegible] lesion. [illegible] red.

[illegible] involving portion of cricoid ring [illegible]

Extensive [illegible]

well differentiated carcinoma of right cord [illegible] column [illegible] beginning [illegible]



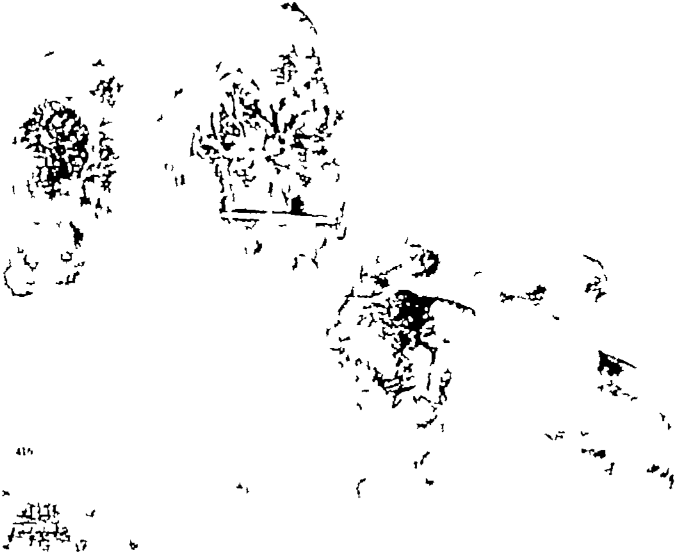
[illegible] extrinsic [illegible]. Laryngectomy, [illegible] left radical neck dissection. [illegible]

[illegible] and extrinsic [illegible]. Laryngectomy and [illegible] right radical neck. [illegible]

[illegible] Two months [illegible] metastasis [illegible]

[illegible]. Laryngectomy [illegible]

Extensive … [illegible] … Laryngectomy, including … [illegible]

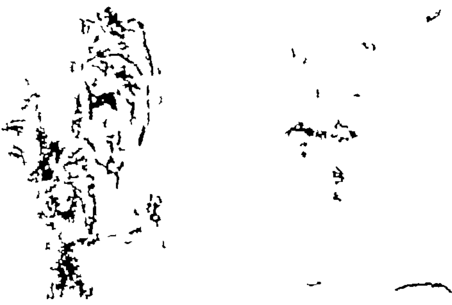


[illegible] form sinus and extrinsic [illegible]. Laryngectomy, [illegible] radical neck dissection. [illegible]

Carcinoma [illegible] extrinsic [illegible]. Laryngectomy and [illegible] right radical [illegible] neck. [illegible]

[illegible] months [illegible] metastasis.

[illegible] Carcinoma [illegible]



Carcinoma [illegible] sub-glottic [illegible] nodes. Laryngectomy and right radical neck dissection.

Laryngectomy [illegible] neck dissection. [illegible] specimen showed no involved [illegible]

[illegible] ng- [illegible] neck [illegible] cal [illegible] dissection

[illegible] extensive [illegible] with previous tracheotomy. Laryngectomy and [illegible] radical neck dissection.

Glottic and [illegible] without palpable [illegible]. Nodes palpable along right [illegible] on exploration. Laryngectomy and [illegible] positive on section.

Glottic and [illegible] metastasis. Laryngectomy and left radical neck dissection.

[illegible] Laryngectomy [illegible] Subsequent [illegible]

dissection.

dissection.

[illegible] palpable metastasis [illegible]. Laryngectomy and [illegible]

Glottic [illegible] palpable [illegible]. Node palpable [illegible] exploration. Laryngectomy [illegible]

INDICATIONS for TOTAL LARYNGECTOMY

1. CANCER OF VOCAL CORD reaching posterior end, producing fixation or extending subglottically (narrow-field laryngectomy)
2. CANCER OF VENTRICULAR BAND OF VENTRICLE (wide-field laryngectomy with or without simultaneous radical neck dissection)
3. CANCER OF EPIGLOTTIS (except very early cases with involvement of only the crest.)
4. CANCER OF LARYNX with palpable cervical metastasis (laryngectomy combined with simultaneous radical neck dissection)

TREATMENT of RECURRENCE and/or METASTASIS FOLLOWING LARYNGECTOMY

	TOTAL CASES	DETERMINATE CASES	DEAD OF DISEASE	5 YEAR SURVIVAL
RESECTION OF RECURRENCE	5	4	2	2
RESECTION PLUS X-RAY	3	3	2	1
RADICAL NECK DISSECTION	3	3	2	1
RADICAL NECK PLUS IRRADIATION	9	9	7	2
IRRADIATION ALONE	28	27	26	1
UNTREATED or TREATED ELSEWHERE	15	15	15	0
TOTALS	63	61	54	7

FIVE YEAR SURVIVAL RATE (Salvage) 7/61 = 11%

INDICATIONS for IRRADIATION

1 CANCER OF VOCAL CORD too extensive for laryngofissure (involving posterior extremity) but without fixation

2 CANCER OF THE EPIGLOTIS especially when of undifferentiated type.

3 CANCER OF LARYNX Considered inoperable because of extent of involvement of pharynx or base of tongue.

4 CANCER OF LARYNX in which laryngectomy is contraindicated by physical condition or temperament of patient, or is refused.

TREATMENT OF RECURRENCE FOLLOWING IRRADIATION

	TOTAL CASES	DETERMINATE CASES	DEAD of DISEASE	5 YEAR SURVIVALS	
Further Irradiation	19	19	14	5	26%
Partial Laryngectomy	3	3	0	3	100%
Laryngectomy	6	5	1	4	80%
Laryngectomy-Radical Neck	4	4	2	2	50%
No Treatment	7	7	7	0	
TOTALS	39	38	24	14	37%

FIVE YEAR SURVIVAL RATE (Salvage) 14/38 = 37%

Twenty Five Years of Otolaryngology in a University Hospital.

EDMUND P FOWLER JR., FRANZ ALTMANN, D C. BAKER JR., V EPANCHIN, H. S. FRIEDMAN, DEGRAAF WOODMAN, BELA MARQUIT and DONALD MARKLE, Columbia-Presbyterian Medical Center New York.

Charts show basic ear nose, and throat principles in 1930 as compared to additions made in last 25 years. Emphasis is on advances made by the ideals on staff of Columbia Presbyterian Medical Center shown in detail, ith photographs, directions, instruments, and models to show fenestration surgery stapes mobilization facial nerve surgery surgery of meatal atresia, and medical management of Ménière's disease. In addition, functional rhinoplasty laryngeal stenosis, bilateral abductor paralysis, several panels on endoscopy audiology and speech, as well as Kodachrome slides of general ear nose nd throat pathology for teaching purposes are presented. nalysis of statistics show that in one hospital service here here were fewer attending surgeons and about the same number of beds, operative cases have more than doubled in the last 20 years, and the number of patients treated medically has also increased.

Cancer of the Larynx.

WALTER H. MALONEY Hahnemann Medical College and Hospital, Philadelphia.

The exhibit stresses the importance of arly diagnosis of cancer of the larynx and, particularly the office management of such problems so as to insure early diagnosis and proper treatment. The important pathology to be considered in the differential diagnosis is shown on Kodachrome slides. The different steps that the general practitioner must go through to obtain proper diagnosis ar outlined. The actual surgical techniques and postoperati rehabilitation are covered. Specialized recording equipment ill be vailable so that the visitors ill be able to hear the speech of patients ho hav been treated by laryngectomy laryngofissure, and irradiation. It is anticipated that the exhibit will stimulate and encourage the general practitioner as well as the specialist, to better understanding of this disease

Cleft Palate Program.

HERBERT CONWAY RICHARD B. STARK, and SENTA JENSEN, New York Hospital-Cornell Medical Center New York.

Th exhibit includes photographic transparencies of patients before oper tion and during the many steps of ancillary therapy such as speech therapy orthodontics, social service observation, general dentistry child psychology surgery for the correction of speech and final cosmetic surgery ogether ith artist's sketches of the operative steps involved in the techniques of the one-stage push back operation coupled ith the pharyngeal fla procedure. The combined operative procedures have resulted he development of normal speech in 80% of patients. Statistics show results.

Glomus Jugularis Tumor

HARRY ROSENWASSER, Mount Sinai Hospital, New York.

The exhibit discusses the historical background of the glomus jugularis tumor; its recognition, grossly and histologically; the symptoms and signs of that tumor; and -ray evaluation will be discussed. Modern therapy for this condition is presented.

Your Ear and Noise.

ARAM GLORIG, D E. WHEELER, and H. P HOUSE, Subcommittee on Noise in Industry Los Angeles.

The exhibit is designed to show the relations of hearing loss to noise exposure. It shows (1) noise analysis graph and description, (2) diagram of the external and middle ear exposed to an industrial noise, (3) the cochlear spiral, cross section of the cochlea at the 4,000 cps area, and (4) typical noise induced hearing loss audiogram. The noise graph, cochlear spiral and cross section, and the audiogram are fitted with colored lights that turn on and off in sequence automatically

Heredity of Multiple Benign Cystic Epithelioma.

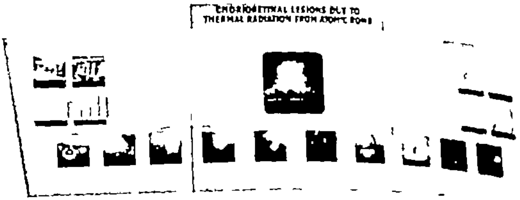
L. EDWARD GAUL, Evansville, Ind., WILBERT SACHS, Passaic, N J., and PERRY M. SACHS, New York.

These inherited tumors affect notably the nose, especially the nasolabial fold, and are apt to be particularly abundant over the base of the nose. Some of the patients develop tumors that primarily affect the ears, especially the concha. A family was discovered in Indiana with the affliction, and the pedigree of this family will be shown. Over 50 patients have been personally examined, and many of these had the tumors studied histologically Supplementing the pedigree hart will be diagrammatic sketch of the genetics of multiple benign cystic epithelioma and the presentation of other benign tumors of the nose and ears to be considered in the differential diagnosis

Medical Audiology: A New Subspecialty

MAURICE SALTZMAN, Temple University School of Medicine, Philadelphia.

Otological and retrolabyrinthine diseases give characteristic responses to the audiologic tests. Research has augmented and diversified the diagnostic significance of the audiogram, the relation of speech intelligibility to pure-tone acuity; the presence or absence of recruitment; the lowering of the threshold of discomfort; the measurement of tinnitus; the detection of hyperacusis, paracusis, or diplacusis, and the occurrence of loudness with decrement. Graphic patterns of various medicoaudiologic aspects are presented.

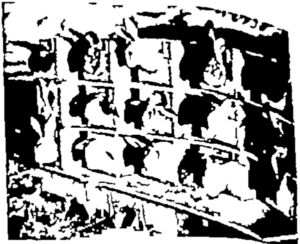


Chorioretinal Lesions Due to Thermal Radiation from Atomic Bombs.

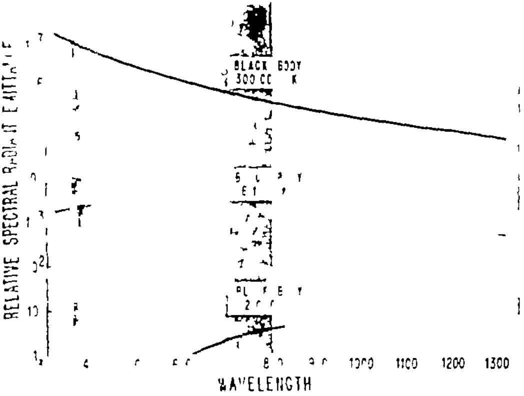
DAVID V. L. BROWN and HEINRICH W. ROSE, United States Air Force School of Aviation Medicine, Randolph Air Force Base, Texas.

The exhibit demonstrates the ophthalmoscopic appearance and pathology of chorioretinal lesions due to thermal radiation from atomic bombs.

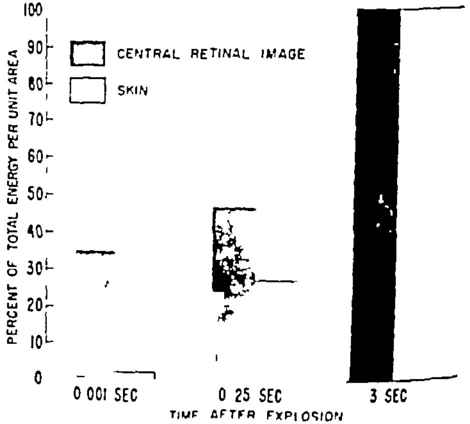
Rabbits were exposed to the atomic flashes t dawn in boxes with heads fixed in such position that their visual axes were directed at the detonation point. Alarm clocks were used to waken them just prior to detonation. Equipment shown tomatically photographed the rabbits within the first 50 milliseconds fter detonation and before the rabbits could blink. Pigmented rabbits were used because their fundi absorb radiant energy similarly to the human.



Photograph made by means of illumination provided by tom bomb. By this method it was possible to eliminate from consideration those rabbits with closed or shaded eyes.

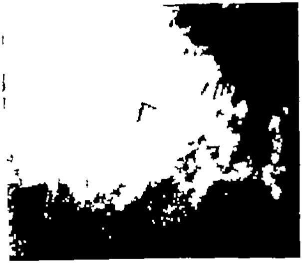


Spectral emission of black bodies of 500,000°K (t 0.0001 sec) 6100 K (t 1 sec) nd 9000°K (t 0.01 sec) representing hree phases of the tomic fireball.



Tl of inc lenc of certa per entages of the total thermal energy per unit area from nomin nal tomic bomb for the entral part of retinal im ge nd the skin. Thus bout 5" of he tot l radia ion l es at the etina bef protection by the blink reflex ca intervene

Burn produced t two miles from detonation poi t of bomb. Lesion below optic disk.



Burn prod ced t three miles from detonation point early

The intensity of radiant energy produced by n atomic explosion is very high. The fireball for short period has roughly 100 times the brightness of the sun. This energy is made up of ultraviolet, infra red, nd visibl light. If person is looking i the direction of atomic det onation, an image of the fireball is formed on his retina. The amount of energy per, nit rea of this retinal image depends on the emission of energy per it area of the fireball ttenuation by the atmosphere the square of the relative opening of the eye, and the bsorption by the ocular media. While the amount of energy falling on the ey decreases as the square of the distance, the size of the retinal image decreases by the same ra tio, so that the energy per unit area remains the same (minus

Atomic bomb used in one of he tests.

only the energy absorbed by the atmosphere) p t distances t which the optics of the ey form minimal-sized image.

I an experiment tilizing 750 pigmented rabbits, 75 per cen of the rabbits exposed t dawn to atomic bomb detonations received chorioretinal burns t distances up to 15 miles. Burns were observed t distances up to 42 miles.

The visual effect of chorioretinal burns varies with the location of the inj ry. If in the macula, there will be permanent scotoma and loss of isual acuity. If more peripherally located, then fiber bundle interruption and retinal detachment constitute serious hazards. A substantial burn on the optic disk may re sult in complet blindness.

Burn t three miles, fi hours after detonation of bomb.

Lesion of preceding photograph four weeks fter inj ry

B rn produced t five miles from detonation point of bomb.

Burn produced t eight m les from detonation point of bomb

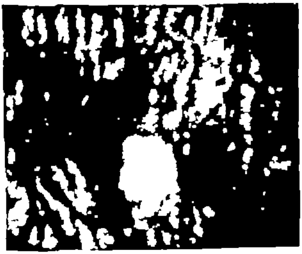
Burn produced t 10 miles from detonation point of bomb.

Chorioret nal nd scleral lesion pr luced fiv m les f om det na on point of bomb Local hea ng t he healing p pr luced a er apor explosion

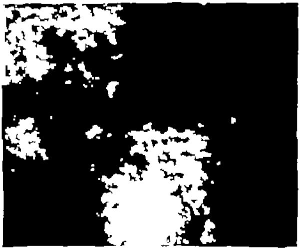
M ter te he ret nal lesion he produced t fiv miles C agulation net ou mol es ll la ers of the retina nd horoid

Minor lesi th mu lamage in pigmen la er nd the outer la er of the et na

Com posit histological pict fer ring to dou ble lesion i the llust ion the pper right hand corner of the f llow ng page

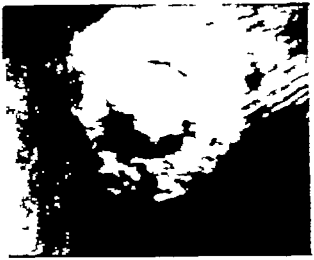


Burn pr luced 18.5 miles f om detonation poi of bomb



B rn prod ced 4 miles f om detonation point of bomb

Interconnected double lesion due t movemen of the bli t ey produced t 10 miles from detonation poin of bomb.



[illegible]

[illegible] produced at five miles from [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

M nor lesion ith ma l mage in pigment la er and the outer la er of the ret

Composit histological pict fer ing to double lesion I the illustration t the upper ight hand corner of the following page

Bu prod ed at 10.5 m les f om detona ion point of bomb.

Bu prod l at 4 iles f om detonat on point of bomb

I erconnected double lesion due to movemen of the bb ey produced t 10 miles from detonation point of bomb.

Radioisotopic Portable Field X-ray Unit.

WILLIAM W COX, Army Medical Research Laboratory Fort Knox, Ky and ELMER A. LODMELL, Office of the Surgeon General, Department of the Army Washington, D. C.

The exhibit consists of portable -ray machine, miscellaneous demonstrations, pictures, and diagrams showing its construction, capabilities, and military significance.

Curative Treatment of Vivax Malaria with Primaquine.

TYRON E. HUBER, Office of the Surgeon General, Department of the Army Washington, D. C., and RALPH JONES JR., Hospital of the University of Pennsylvania, Philadelphia.

The exhibit presents graphic description of the natural history of falciparum and vivax malaria together with the results of studies comparing the toxicity and therapeutic activity of primaquine with that of pamaquine and isopentaquine. These studies demonstrate that primaquine is safe for routine administration to large groups of men on land or on shipboard, and that 15 mg. of primaquine daily is highly effective in preventing relapses of Korean viv malaria, when administered at the time of an acute attack, or hen administered before the occurrence of clinical attacks. On the basis of these studies, primaquine was administered to Army troops returning from Korea, starting in 1952, in an attempt to cur malaria befor the occurrence of clinical attacks. Data indicating that this was highly effective are presented.

Professional Training Opportunities for Medical Officers in the U S. Army

CHARLES L. LEEDHAM, Department of the Army Washington, D C.

The exhibit portrays the Army Medical Servic Graduate Professional Education Program available to medical officers. This program includes authorized medical specialties and formal training and practice requirements for each specialty the United States Army hospitals offering training in ach residency The exhibit in addition covers the Army M dical Intern T aining Program offered at designated Army hospitals and Army Medical Serv. Officers Courses offered by the Department of the Army to medical officers.

The Surgical Treatment of Portal Hypertension.

EDWARD J JAHNKE JR., Walter Reed Army Medical Center Washington, D C.

The exhibit consists of color transparencies, -rays, drawings, and statistical tables that present the methods of diagnosis, surgical treatment, and follow-up studies of 53 patients with portal hypertension

A Rapid Method for the Determination of Microbial Susceptibility to Antibiotics.

IRVING DAVIS, United States Air Force School of Aviation Medicine, Randolph Air Force Base, Texas.

The exhibit presents the techniques and testing procedures for rapid method for the determination of microbial susceptibility to antibiotics. The rapid method is evaluated ainst standard methods.

Blood Vessel Repair and Replacement.

CARL W HUGHES, Walter Reed Army Medical Center Washington, D. C.

The exhibit presents the results of repairs of acute vascular injuries from the Korean war as well as results from the experimental use of autogenous, homologous, and heterogenous artery grafts, preserved by various techniques, plus the use of plastic grafts.

Hyperventilation.

BRUNO BALKE, United States Air Force School of Aviation Medicine, Randolph Air Force Base, Texas.

The exhibit presents the clinical symptoms of hyperventilation and the correlation between those symptoms and psychomotor responses. It shows sampling device and method devised for an in-flight evaluation study of the potential incidence of hyperventilation among aircrewmen.

Training in Care of the Ten Most Common Traumatic Injuries.

KLYDE E. KRAFT Department of the Army Washington, D. C.

The exhibit consists of transparencies and wound moulages in natural color. It vividly displays the part of the United States Army Medical Service's First-Aid Program. The transparencies show the use of the different types of wound moulages in field training. The wound moulages dramatically resemble guillotine amputation by shrapnel; laceration of vein on hand; perforation of chest and lung by missile; stomach wound by sharp object; compound fracture of tibia; etc. The moulages are designed to simulate actual wounds as confronted by aidmen on the battlefield. They are placed on the simulated casualties during a field problem. By mechanical means the casualty can cause artificial blood to flow from the wound. The aidman, by application of bandage, pressure point or tourniquet, can stop the bleeding and administer first aid and treatment.

What Is a Safe Driver?

FREDERICK L. MCGUIRE, Naval Medical Field Research Laboratory Camp Lejeune, N C.

The exhibit portrays the evaluation and classification of operators by means of an analysis of the personality, sociological and attitudinal characteristics of the individual by psychophysics.

Late Effects of Internally Deposited Radioactive Materials.

WILLIAM B LOONEY U S. N val Hospital, National Naval Medical Center Bethesda, Md.

Four investigations of the late effects of internally deposited radioactive materials have recently been made. The investigation of the late effects of radium salts given orally and intravenously to 30 patients for medical purposes and 28 patients employed as luminous dial workers was made at the Harvard Medical School, the Argonne National Laboratory, and the Massachusetts Institute of Technology. The investigation of the late effects of thorotrast given to 250 patients was made at the Finsen Institute, Copenhagen, Denmark, and the Naval Medical Center in conjunction with the universities of Utah and Rochester. A summary of the clinical, histopathological, autoradiographic, roentgenographic, radiochemical findings ill be presented. Emphasis is placed on the clinical findings that may aid in the diagnosis of internally deposited radioactive materials. The importance of the data obtained from these patients for the more adequate protection of the increasing numbers of our population ho will be exposed to radioactivity is stressed.

The U S. S. Bennington Disaster: The Management of Casualties and Treatment of Casualties.

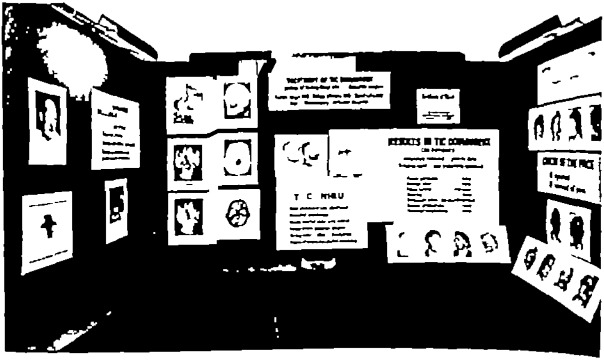
DONALD W MILLER and J L. ENYART United States Naval Hospital, Newport, R. I.

This exhibit depicts the medical histories of 74 critically and seriously burned naval personnel treated at the U S. Naval Hospital, Newport, R. I.

TREATMENT OF TIC DOULOUREUX

By Injection of Boiling Water into the Gasserian Ganglion

Rudolph Jaeger M.D. William Whiteley M.D. David LaFia M.D.
Dept of Neurosurgery Jefferson Hospital



Treatment of Tic Douloureux by the Injection of Boiling Water into the Gasserian Ganglion.

RUDOLPH JAEGER, Jefferson Medical College and Hospital and WILLIAM H. WHITELEY Wills Eye Hospital, Philadelphia.

During the past two years a technique has been used for controlling the pain of tic douloureux and cancer of the face by the destruction of the gasserian ganglion cells with boiling water. Cases have been purposely selected because of the poor operative risk involved. The results have been equal if not superior to the operative methods of controlling this disorder but requires certain meticulous technical details in order to be successful and avoid complications. The technique and postoperative results are shown by the exhibit.

Grimace of painful attack.

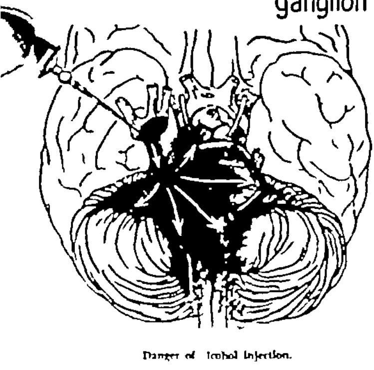
YOU CAN DIAGNOSE TIC DOULOUREUX BY:

1 Pain over side of face

2. Recurrent attacks

3 Generally, sharp "stabbing" "lightning like"

4 Relieved permanently *only by* ganglion injection or operation



Danger of lcohol Injection.

Method of boiling water

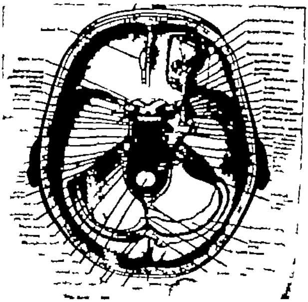
X ra technique.

Approach to foramen ovale

Basal skull -ray ith needle t foramen ovale.

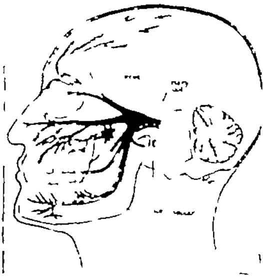
Needle i foramen ovale.

Basal skull ray with needle inside foramen ovale.



Cranial

Post injection sensory pattern. Left, immediately after injection, right 18 months after injection.



Gasserian ganglion and roots.

TECHNIQUE

1 Entire procedure in xray department

2 Pentothal anesthesia

3 Needle inserted under xray control

4 Needle enters gasserian ganglion

5 Boiling water---0.5cc to 2cc injected

6 Degree of sensory loss checked immediately

RESULTS IN TIC DOULOUREUX

(32 PATIENTS)

27 completely relieved of pain to date

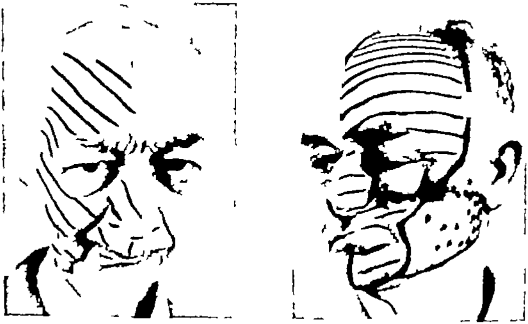
5 had no relief of pain (relieved by operation)

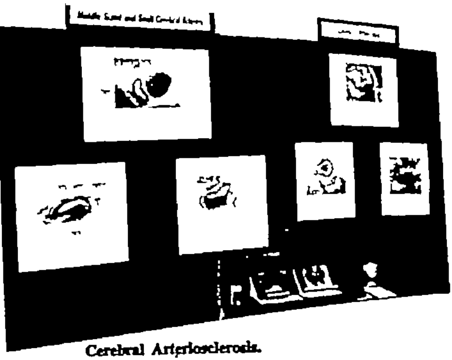
Facial paralysis.........none
Corneal ulcer..........none
Facial herpes....... one case
Deaths...............none
Extra ocular palsies...two cases (temporary)
Serious complications......none
Permanent complications.....none

PATTERN OF SENSORY LOSS AFTER INJECTING GANGLION FOR TIC DOULOUREUX

CANCER OF THE FACE

6 injected
6 relieved of pain

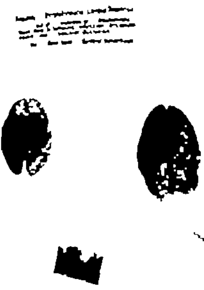




Cerebral Arteriosclerosis.

WALTER L. BRUETSCH and CLIFFORD L. WILLIAMS, Central State Hospital and Indiana University School of Medicine, Indianapolis.

The exhibit shows the two major sequelae of cerebral arteriosclerosis, cerebral thrombosis (softening) and hemorrhage, with new viewpoints obtained from histological human material concerning the exact mechanism of arterial occlusion in arteriosclerotic softening of the brain. Emphasis is placed on endothelial proliferation as the causative occluding factor of small vessels, producing "little strokes." Photographs demonstrate the role of fatty deposits (cholesterol) in the occlusive mechanism of large cerebral vessels.



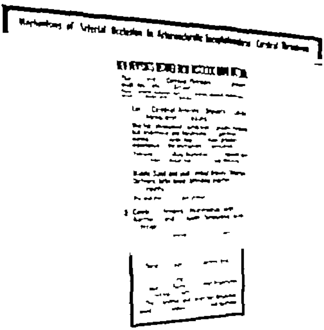
M ldle erebr l rtery E cent ic deposits of lipids (black) w lled off by br ad la er of connect tissue (gray)) from the ema g l men At L the lipid ha dropped out. Sudan fat st Age of patient w 64

Corona y artery Lipid deposits (black) stenosing the lumen t bout one-si th of its normal diameter Suda fat stain. Pa tient was a carpenter ged 68, of slender physique and poorly nourished.

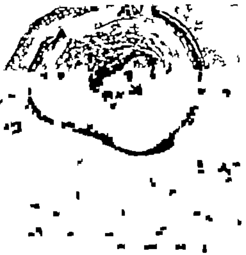
Arteriosclerotic rteritis obliterans, bet ter termed obliterat ng endothelial rt iopa hy Middle sized meningeal rtery l tient w man, ged 79

Striat artery going t small rea of sof tening l striat m. More tha half of the l men is obliterated by mass of recently proliferated fibroblastic nd nd fferentiated mesenchymal cells (black) some being in mitotic nd amitotic cell d l sion. There no lipid deposits. Patient was ma aged 56.

Focu of embryonic llula prolifer tion The focus consist of m nute hyper h omatic nucle nd of tongue of cy oplasm ex tending through the lumen This process d ffers f ndamentally from hrombosis Small cerebral rtery Tol blue stain. P tient man, ged 56, th rteriosclerotic encephalomalacia



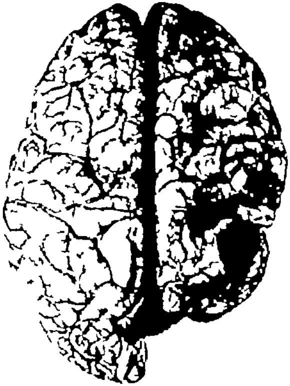
Hyalinization of cerebral arteriole. At one place (arrow) there is proliferation of endothelial cells, one of these exhibiting mitotic figure. See attached high power magnification. Age of patient was 63.



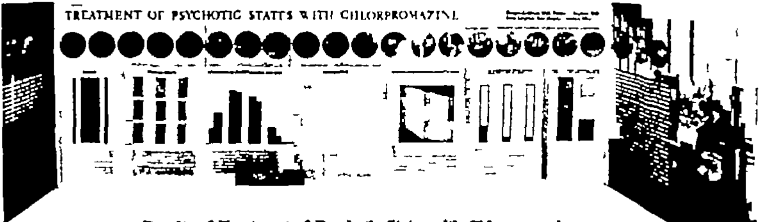
...idth near occlusion. Patient was man aged 56.

The lesion of the "little stroke," represented by areas of recent (encircled) and old cystic softenings (above). Such microscopic infarctions are caused by hyalinized arteriole plus terminal endothelial proliferation, rather than thrombosis. Patient was man aged 64.

A eriosclerotic l fa ction of right oc ipital lobe in ma ged 63. Su vi l period 10 months.



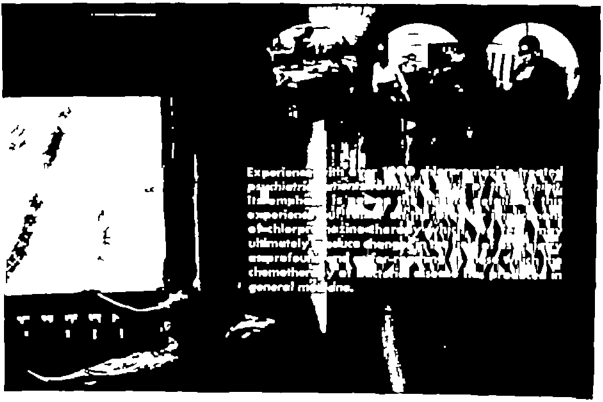
Masal hemor hage in ight basal ganglia in man ged 70. Surviv l period 22 hours.



Results of Treatment of Psychotic States with Chlorpromazine.

Douglas Goldman and Frances Marion Stephens, Longview State Hospital, Cincinnati.

This exhibit summarizes our experience with chlorpromazine in the treatment of more than 800 institutionalized psychiatric patients, using the drug alone as well as to augment electroconvulsive and insulin shock therapies. In general, the results vary from extremely favorable in psychoses of recent origin (0 to 5 years) to satisfactorily palliative in psychoses of long duration (10 or more years). The clinical aspects of this new treatment—patient response, dosage, duration of treatment, side effects and untoward reactions—and its total effect from an administrative point of view are presented.

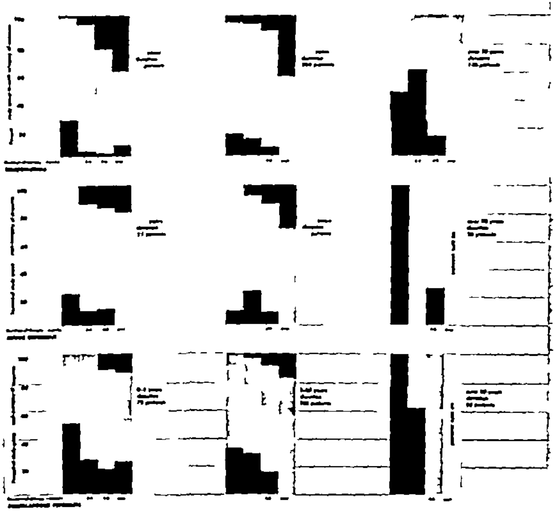


DOSAGE

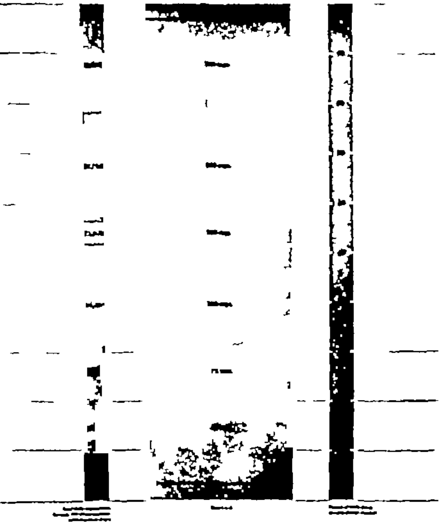
The chart shows the approximate number of patients receiving each of the regularly employed dosage levels on an average day. Patients beginning therapy account for most of the 25-50 mgs. t.i.d. dosage. Doses exceeding 200 mgs. t.i.d. were employed chiefly in chronic and resistant patients. Initial treatment is administered orally or intramuscularly according to the condition of the patient.

It is evident that if a third of the patients in a 3,000 bed mental hospital were to be treated with chlorpromazine, the requirements for a single day would exceed 450,000 mgs. The effect of such demands on the over-all annual drug requirements of a mental hospital is apparent.

OVER-ALL RESULTS



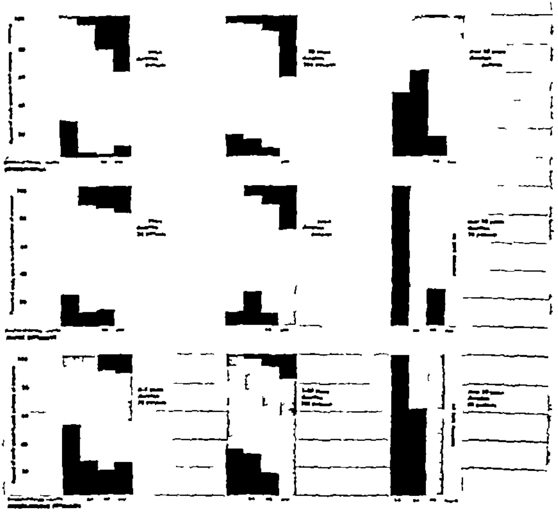
DOSAGE



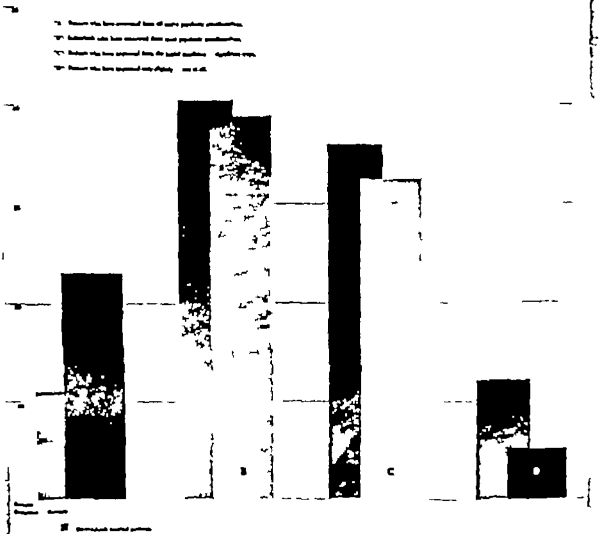
The chart shows the approximate number of patients receiving each of the regularly employed dosage levels on an average day. Patients beginning therapy account for most of the 25-40 mgs. t.i.d. dosage. Doses exceeding 200 mgs. t.i.d. were employed chiefly in chronic and resistant patients. Initial treatment is administered orally or intramuscularly according to the condition of the patient.

It is evident that if a third of the patients in a 3,000 bed mental hospital were to be treated with chlorpromazine, the requirements for a single day would exceed 450,000 mgs. The effect of such demands on the over-all annual drug requirements of a mental hospital is apparent.

OVER-ALL RESULTS



COMPARISON OF CHLORPROMAZINE AND E.C.T



In the chart above, the response of [illegible] schizophrenics treated four months or more with chlorpromazine is compared with that observed in [illegible] schizophrenics treated with electroconvulsive therapy. While 'B' and 'C' responses are roughly comparable with both regimens, the number of complete recoveries is doubled in the chlorpromazine-treated group and complete failures are reduced nearly two thirds. The significance of these figures is increased by the fact that duration of illness ranged from 1 10 years in 60% of the chlorpromazine patients, most of whom had been continuously hospitalized and had failed to respond to electroshock. Only 20% of the electroshock group had been ill for more than one year.

COMPLICATIONS

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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CORRELATION BETWEEN RESPONSE AND DURATION OF THERAPY

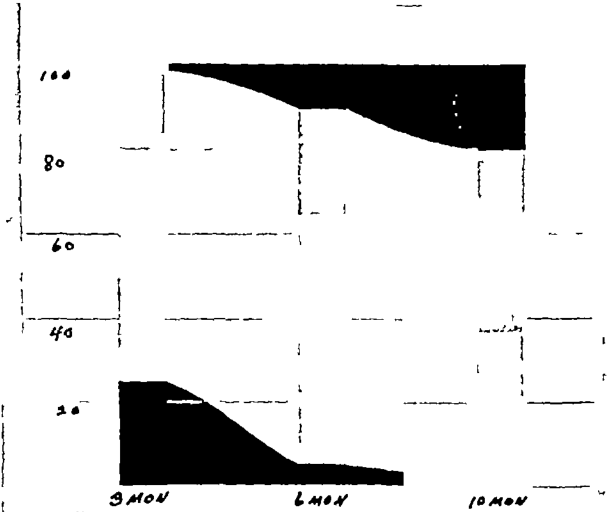
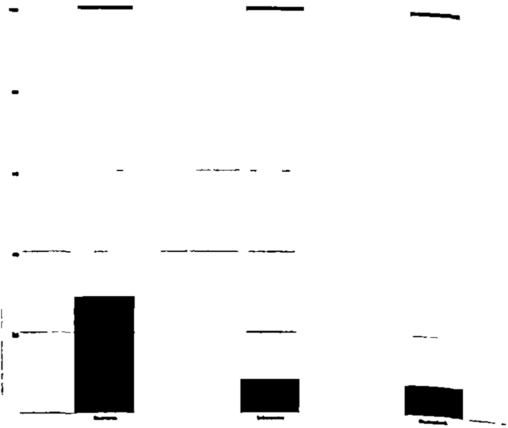


Figure 5 illustrates the consistent correlation between duration of treatment and degree of improvement in 40 unselected patients treated 10 months with chlorpromazine. Patients with psychoses of shorter duration tended to respond sooner to treatment but even in the chronic and relative patients there was an unmistakable improvement in response as therapy was extended for progressively longer intervals. As yet, no limiting time factor has been observed.

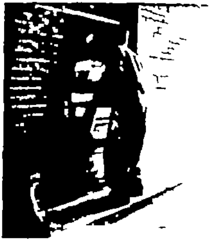
EFFECT OF CHLORPROMAZINE THERAPY ON SOME TYPICAL MENTAL HOSPITAL STATISTICS



By slow degrees chlorpromazine therapy has begun a quiet revolution in the daily routine of Longview State Hospital. As the number of patients receiving the drug increased, the peripheral effects of their treatment gradually surfaced: routine lobotomies almost eliminated; insulin and electroshock treatments decreased; dresses ordered for patients who had been destructive for years; and fewer patients restrained each month. The graphs presented above compare these indices of the daily workload in this mental hospital before and after chlorpromazine was used routinely. The changes they imply may be summed up in the fact that for the first time in its history, Longview State Hospital does not have a "violent" ward.

Insulin treatment

Domestic chores on the former "violent" ward.



A former "violent" patient at work.

Autism produced by Chlorpromazine

Scene on former "violent" ward.

Former deteriorated patient at play

Which [illegible] had the Toni?

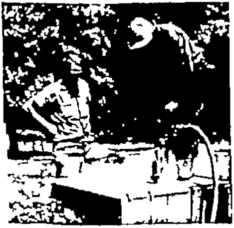
New activities on the "violent" ward.

Unstaged scene on former "violent" ward

New interests fter 14 years in the hospital.

What a Chlorpromazine patient ca do.

Effect of Chlorpromazine fter fa lure of insulin, electric shock, nd two lobotomies.

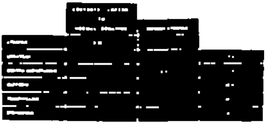


Chlorpromazine patient t work on the hospital grounds.

Chlorpromazine patient work in the commissary office.

Outpatient comes back for her monthly ration of medicine.

Former patient working in flower shop making corsages; previous failures over eight years from electric shock and lobotomy



Male Fertility Nutrition and Neurosis.

W Horsley Gantt Wm. W Scott and Mac C. Reinhoff Johns Hopkins University School of Medicine, Baltimore.

Male fertility estimated by deviation erection and sperm count, was studied in relation to nutrition and neurotic conditions. After five days of complete starvation the sperm count was increased rather than decreased and somewhat more increased after 10 days of starvation; with return to normal diet, the sperm count decreased; thus, contrary to usual opinion, acute starvation improves fertility Neurotic states act in several ways, depending upon the type of animal, they may produce complete impotence, ejaculatio praecox, or increased erections. The above facts suggest the least capable may produce the most offspring and are important for world population and sociology

The Diagnosis and Treatment of Brain Atrophy in Patients Under Forty

Averill Stowell, Tulsa, Okla.

Slides show the various types of brain atrophy and differentiate between the cerebral, cortical, and cerebellar types. Clinical histories are given, together with actual -ray films in other cases. A total of 900 cases of brain atrophy are reviewed, 196 of which were treated by surgical procedures.

Results of Temporal Lobectomy for Psychomotor Epilepsy

Arthur A. Morris, Washington, D C.

The exhibit presents preoperative ... between attacks, average duration of medical treatment before operation, classification of results, results two to seven years following operation, influence of type of operation upon results, operative and postoperative complications, relationship between side of electroencephalogram focus and operative result, use of medicines following operation, relationship of neurological disorders in the family and other factors.

Psychiatric Services in General Hospitals.

Lucy D. Ozarin, Veterans Administration, Washington, D. C.

The exhibit shows that good medical practice includes the availability of psychiatric diagnosis and treatment and that it is possible to provide such services in the general hospital. The illustrated material enumerates the contributions of psychiatric services in general hospitals, presents ve floor plans and interior photographs of psychiatric services 500 and 200-bed general hospitals, shows the composition of the team, and outlines pictorially the functions of psychiatric namely selection of patients, diagnosis, treatment, and disposition. Finally brief statistical table shows the operation of psychiatric services in typical 500 and 200 bed hospitals.

Management and Rehabilitation of Emotionally Maladjusted Children.

James A. Flaherty Governor Bacon Health Center Delaware City Del., and Robert L. Gatski, Danville State Hospital, Danville, Pa.

The exhibit consisting of charts, graphic analysis, and representative case histories reviews the problem and present-day management of severe, chronically disturbed children. It points up the need for early recognition, treatment, and sustained interest as necessary for the rehabilitation of such children. Results with chlorpromazine as an adjunct to treatment are presented.

Alcoholism.

Marvin A. Block, Buffalo, N. Y Committee on Alcoholism of the Council on Mental Health, American Medical Association.

The exhibit deals with the development of alcoholism and the treatment of acute alcoholic intoxication as well as the treatment of chronic alcoholism. Alcoholism as medical problem is emphasized.

Epidemiological Investigations of Amyotrophic Lateral Sclerosis.

Leonard T Kurland, National Institute of Neurological Diseases and Blindness, U S. Public Health Service, Bethesda, Md., and Donald W Mulder, Mayo Clinic and Foundation, Rochester Minn.

The exhibit demonstrates the prevalence of amyotrophic lateral sclerosis based on mortality statistics in several American and European countries. Only one in thousand adult deaths in these countries is due to amyotrophic lateral sclerosis. In the Mariana Islands, on the other hand, 5 to 10% of adult deaths are due to this same cause. Surveys of the peoples of the Western Pacific Islands reveal that only among the Chamorros (natives) in the Mariana Islands was the incidence so high. The disease has long been recognized by these people as an inherited disorder. It is our hypothesis that amyotrophic lateral sclerosis is due to metabolic defect that is often inherited. The exhibit portrays the worldwide geographic distribution, several selected pedigrees from Guam, North and South America, and Europe. A series of Kodachrome slides reveal that clinically and pathologically the neurological disorder observed among the Chamorro families is the classical form of amyotrophic lateral sclerosis.

Pharmaceutical Treatment of Patients with Senile Brain Changes.

Leopold Hofstatter, Abel Ossorio, Billie Mandl, Louis H. Kohler, Anthony K. Busch, and Ann Hyman, St. Louis State Hospital, St. Louis.

Effects of treatment by various drugs and drug combinations in group of senile patients of the St. Louis State Hospital are presented. The study is the result of continued efforts of the psychiatric and psychological team. The results are reported in terms of psychological observations and behavior changes during treatment. The rationale of the administration of drugs selected is shown graphically

The Clinical Basis of Parkinson Therapy

Lewis J Doshay and William Amols, Columbia-Presbyterian Medical Center New York.

The exhibit provides better insight into the rationale of Parkinson therapy It portrays the effects of drugs on the symptoms of Parkinsonism, by means of new methods of electronic recording, and illustrates the changes effected in the different types of Parkinson's disease, by various therapeutic procedures. The method of administration, posology, actions, and side-effects of scopolamine, diphenhydramine, cycrimine, trihexyphenidyl, ethopropazine, benztropine, reserpine, chlorpromazine, and other compounds are described, singly and in combination. A plan for the proper orientation and management of the patient is provided, along with practical measures of psychotherapy Physical therapy is presented in its broadest aspects. The indications for surgical therapy obtain attention.

Mental Disorders in the United States: Some Indications of the Size and Scope of the Problem.

William P Shepard, Earl C. Bonnett and Herbert H. Marks, Metropolitan Life Insurance Company New York.

Charts show (1) current statistics and trends in prevalence, incidence and hospitalization of mental disorders, and hospital facilities available for their treatment; (2) the short-term and long-range outlook for persons with mental disorders; and (3) an outline of major community needs and trends relating to care of persons with emotional or mental disorders. The exhibit brings out the extent to which the steady increase in the number of patients hospitalized for mental disease is accounted for by the growth of the population, especially of older persons, by the reduction in mortality of these patients, and other factors. It also presents the results of new research into the longevity of persons with mental and personality disorders.

Thrombosis of the Carotid Artery

Maurice L. Silver, Miriam Hospital, Providence, R. I.

With the widespread use of cerebral angiography, the diagnosis of carotid artery thrombosis is appearing with greater frequency. This exhibit explains the appearance, in the age group 30-50, of progressive hemiplegia with or without aphasia. Typical cases are presented, and the characteristic x-ray pictures are demonstrated. The etiology and pathology are discussed, and the treatment by medical and surgical means presented. Beneficial results following resection of the superior cervical ganglion would appear to warrant further trial of this therapy.

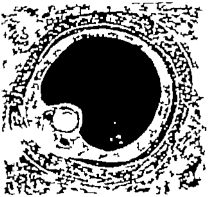
Female Sterility

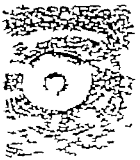
FREDERICK H FALLS and CHARLOTTE S HOLT University of Illinois College of Medicine and Illinois State Department of Public Health, Chicago.

The exhibit consists of charts, drawings, medical sculptures, and plastic carvings illustrating the etiology diagnosis, and treatment of the various phases of human sterility problems. The sculptures are to scale and actual instruments add realism to the visual educational presentation. The male factors are depicted as would be considered by the obstetrician in his contact with a patient from the laboratory standpoint.

PHYSIOLOGY OF STERILITY
(Maternal)

1- Successful development of the Graafian follicle depends on follicle stimulating hormone (FSH) from the hypophysis.
2- Extrusion of fertilizable ova depends on normal intrafollicular tension and normal resistance of tunica albuginea Maturation takes place.
3- Transportion depends on tubal peristalsis and on current produced by cilia of the epithelial cells of endosalpinx Fertilization occurs
4- Implantation depends on the erosive cytolytic activity of trophoblastic cells of blastodermic vesicle and on the favorable progestational changes in the endometrium.
5- The early embryo derives nutrition from autolized decidual cell products through osmosis.
6- Further penetration of the trophoblast opens up decidual blood vessels forming blood lakes
7- Outgrowth of connective tissue and fetal vessels into trophoblastic projections form earliest placental villi



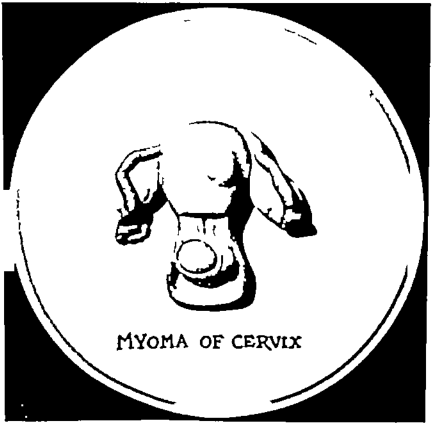


Until relatively recently the diagnosis of the causes of sterility received scant attention. Even today haphazard methods and inadequate procedures are used for their detection by most physicians. A systematic survey of the sterile couple involving special tests to determine anatomical and endocrinological abnormalities of the partners and the effect of these on the production of normal ova and spermatozoa must be progressively studied to determine what factor or factors are responsible for the sterility in a given case.

The ability to discover and correct these abnormal conditions determines the success or failure of the management of these cases.

The causes are most frequently found in endocrine dystrophies or in local genital abnormalities produced by disease or tumor growth.

It is estimated that in approximately 40% of the cases the cause of the sterility will be found in the male.



Cervical fibroids may cause stricture and distortion of the cervical canal interfering with penetration of spermatozoa. Often associated with fibromyomata of the fundus ... ich redis se to sterili and abortion

TREATMENT OF STERILITY
(Maternal)

The treatment of maternal factors responsible for sterility depends on the results of the diagnostic survey and the nature and number of these factors

In general the simpler remedies should be instituted first such as correction of the vaginal hyperacidity diet defects and tendency to anemia.

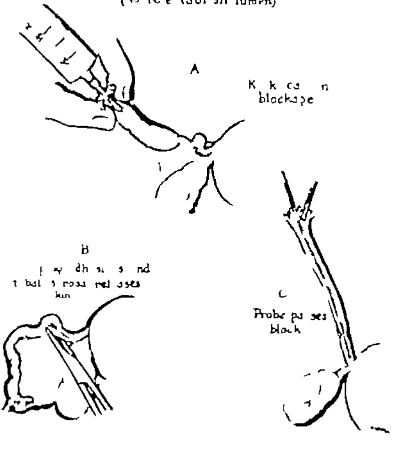
Hormones are used as indicated

Local lesions of the vagina and cervix should be corrected

Tubal patency may be reestablished and maintained by repeated Rubin tests in some cases.

Operative procedures should be reserved for those cases not responding to the above measures or in which it is obvious that these would be of no avail The reason for this is that their success is limited and this by all means should be pointed out to the couple when performing such an operation

TUBAL PLASTIC
(to re e tabl sh lumen)



Fertility Control by Oral Agents: A Contemporary Survey

Carl G. Hartman, Nathan Millman, and Fred Rosen, Ortho Research Foundation, Raritan, N. J.

The oral control of conception has been approached with several chemical agents and plant extractives, and reports in scientific publications have been followed by dubious widespread publicity in lay periodicals. Suggested methods are examined in the light of physiological activity, effectivity and safety. Criteria and methods of laboratory screening for such agents are described.

Photography of the Uterine Canal in the Living.

William B. Norment and C. Henry Sikes, Greensboro, N. C.

This is the first demonstration of photography of tumors of the uterine canal in the living. The uterine canal is the only hollow-viscus or aperture that has not been photographed previously. The photography of the uterine canal is very simple procedure, and the exact technique is demonstrated as done through water hysteroscope.

Tridimensional Pelvimeter Based on Geometric Concepts.

Benjamin Leff, University of Pennsylvania Graduate School of Medicine and Albert Einstein Medical Center, Philadelphia.

An instrument for clinical pelvimetry based on practical application of mathematical concepts is demonstrated. Clinical values compared with x-ray pelvimetry are presented.

Newer Concepts in the Management of Infertility Problems and Hysterosalpingography

Allan Palmer, San Francisco.

The exhibit shows normal and abnormal gynecologic findings of the uterus and tubes, rate of absorption of Ethiodol from the peritoneal cavity and the importance of the 24 hour film in hysterosalpingography. There is small demonstration of the viscosity of Ethiodol as compared with other radiocontrast mediums. There are charts and tables showing percentage success rates for the therapeutic benefits of this procedure in the treatment of the infertile female. Basal body temperature graphs demonstrating normal and abnormal menstrual cycles will be exhibited.

Ureteral Injuries.

Henry C. Falk and Irving A. Bunkin, Beth Israel Hospital, New York, and Samuel H. Kaden, Augusta, Maine.

The anatomy of the ureter and its relationship to the uterine artery and the various structures in the pelvis are shown. The relationship of the ureter to the two ligatures on the uterine artery at the time of doing total abdominal hysterectomy is shown, as well as the method of dissecting out the ureter so as to expose it through its entire length. The relationship of the ureter to pathological conditions such as fibroids, ovarian cysts, tubovarian abscesses and how injury to the ureter can be avoided in handling these pathological conditions is also presented. The relationship of the ureter to the uterine artery during vaginal hysterectomy is included, and how injury to the ureter can be avoided. Should the ureter be injured in the course of the operative procedure, drawings show how it can be repaired.

Cesarean Section Techniques and Prevention of Postoperative Enterocele.

Edward G. Waters, Margaret Hague Maternity Hospital, Jersey City, N. J., and Columbia University College of Physicians and Surgeons, New York.

The exhibit presents pictorial description of low transperitoneal cervical segment cesarean section and supravesical extraperitoneal cesarean section techniques. Descriptive pictures (drawings) of technique for prevention of enterocele following vaginal hysterectomy are shown.

The Nutritional Rehabilitation of Patients with Gynecologic Malignancies.

William L. Smiley, Emmett J. Conrad, and Leslie F. Bond, Homer G. Phillips Hospital and Washington University, St. Louis.

Many patients with gynecologic malignant lesions enter the hospital extremely malnourished, others suffer severe loss of weight while under treatment that has included both radiotherapy and surgery. Often because of the vicious cycle of anorexia, which begets malnutrition, which in turn enhances anorexia, such patients are often unable to care for themselves and require hospitalization. The exhibit is graphic representation of four years' experience in correcting the malnutrition associated with gynecologic malignant disease. The method used was hyperalimentation utilizing an indwelling small bore polyvinyl gastric tube. Appropriate laboratory and clinical data are presented along with detailed instructions as to its practical applications. A majority of patients following relatively short periods of hyperalimentation were eating well and active. Many were able to return to their homes and all required less narcotic and were less of nursing problem.

Colposcopy: Educational Value and Role in Early Detection of Cervical Cancer

Lewis C. Scheffey, Warren R. Lang, Gabriel Tatarian, Jefferson Medical College and Hospital, Philadelphia, and Albrecht Schmitt, Universitäts-Frauenklinik, Cologne, Germany

This exhibit consists of brief outline of the principles underlying colposcopy and the use of the colposcope. It also contains pictorial summary of findings with the normal and abnormal cervical changes, including early cervical cancer. Our own experiences are summarized.

Early Cervical Carcinoma: Types of Growth and Development

August F. Daro, Walter Schiller, Harvey A. Gollin, and Ernest G. Nora Jr., Chicago.

Carcinoma in situ and primarily invasive carcinoma, including early carcinoma, are demonstrated. The primary invasive carcinomas are lesions that do not reveal surface pathology in the early stages. This permits negative Papanicolaou and Schiller tests.

Photocolposcopy

Leopold Z. Goldstein, Edward Viner, Harry B. Roth-man, and Lillian Balter, Albert Einstein Medical Center, Southern Division, Philadelphia.

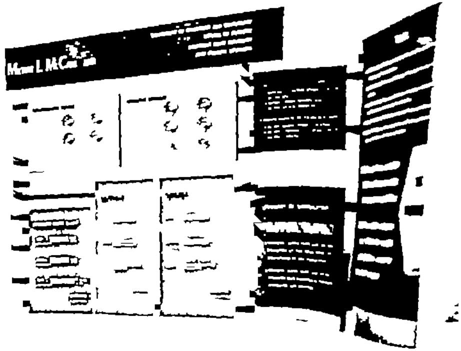
Photographs of normal and abnormal cervices, in pregnant and non-pregnant patients are shown. The Hinselmann colposcope (Muller, Hamburg, West Germany) was used in this study. The appearance of the cervix before and after biopsy and/or electrocoagulation is presented.

HONORABLE MENTION

Cerebral Blood Flow and Metabolism in Toxemia of Pregnancy

MILTON L. McCALL, Louisiana State University School of Medicine, New Orleans.

This exhibit depicts the results of quantitative studies upon the brain in toxemia of pregnancy as well as normally pregnant and nonpregnant individuals. The effects of several sedatives and vasodilators upon blood flow oxygen metabolism, vascular resistance and respiratory quotient of the brain are shown. The clinical implications of these findings are stressed.



BASIC STUDY

BACKGROUND

1. TOXEMIA OF PREGNANCY is frequently associated with symptoms referable to the brain
2. MORPHOLOGIC STUDIES and the electroencephalogram have added to our basic [illegible] ... possible the [illegible]

[illegible] of the brain

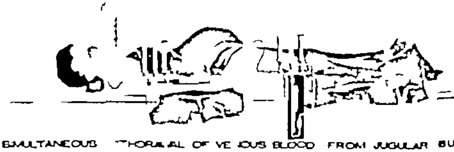
This exhibit portrays the findings in the following two groups:

BASED ON
THE INVESTIGATIONS
OF
CEREBRAL [illegible]
AND
[illegible]
[illegible] WOMEN

A. Basic Study
1. [illegible]
2. [illegible]
3. Preeclampsia
4. Eclampsia
5. Essential hypertension with acute toxemia

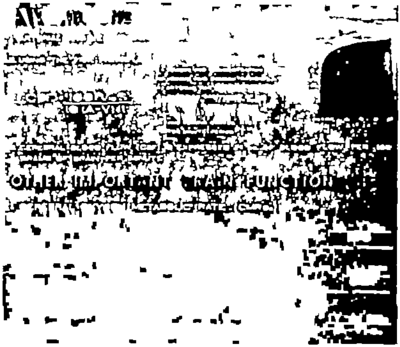
B. Effect of Therapy on Toxemic Patients
1. Sedatives
 a. Amytal Sodium
 b. Pentothal Sodium
 c. Phenobarbital Sodium
 d. [illegible] Sulphate
2. Vasodilators
 a. 1-Hydrazinophthalazine (Apresoline)
 b. [illegible]
 c. [illegible] (Unilateral)
 d. Hydergine
 e. Papaverine Hydrochloride

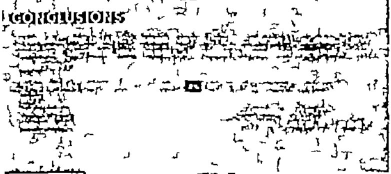
METHOD



1. SIMULTANEOUS WITHDRAWAL OF VENOUS BLOOD FROM JUGULAR BULB AND ARTERIAL BLOOD FROM FEMORAL ARTERY
2. PATIENT BREATHES MIXTURE OF 15% NITROUS OXIDE, 64% NITROGEN, 21% OXYGEN
3. MEAN ARTERIAL BLOOD PRESSURE (MABP) MEASURED DIRECTLY FROM FEMORAL ARTERY WITH MERCURY MANOMETER
4. BLOOD SPECIMENS DRAWN AT FREQUENT INTERVALS OVER A 10 MINUTE PERIOD ARE ANALYZED FOR N_2O, O_2 AND CO_2

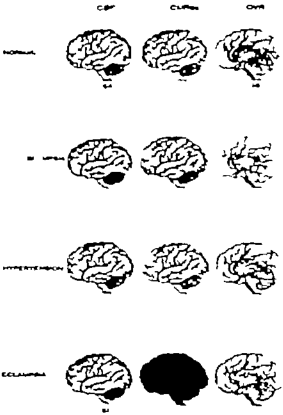
THIS METHOD IS SAFE PROCEDURE AND IS PROVEN TO BE QUANTITATIVE BY DIRECT ANIMAL EXPERIMENTS

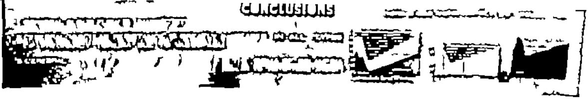




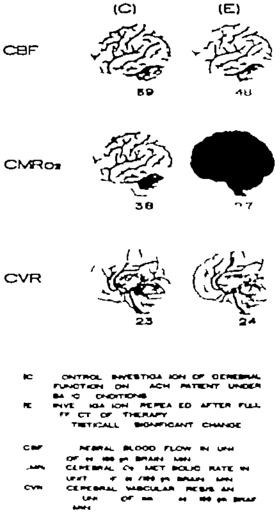
SUMMARY OF TOXEMIAS

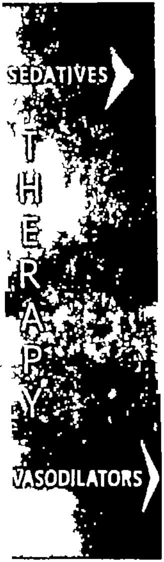
EFFECTS OF
TOXEMIAS OF PREGNANCY ON CEREBRAL FUNCTIONS

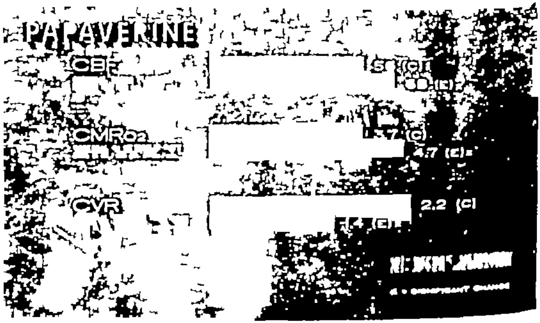




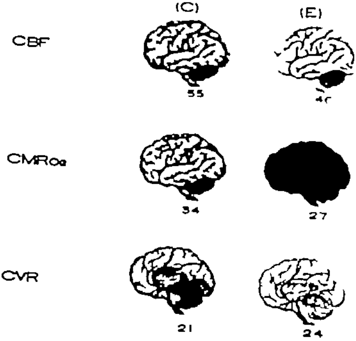
AMYTAL SODIUM

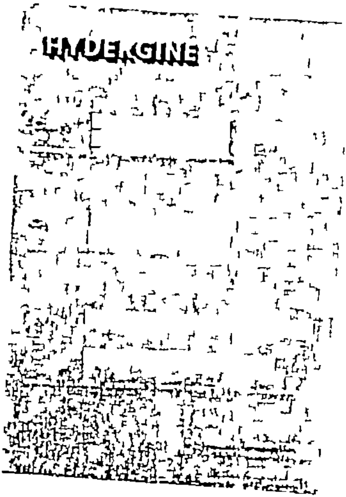




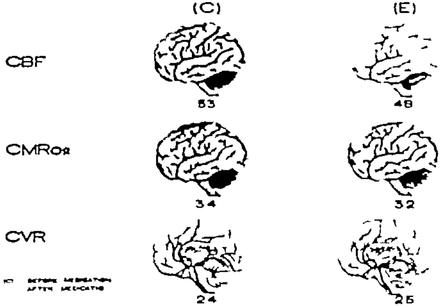


PENTOTHAL SODIUM

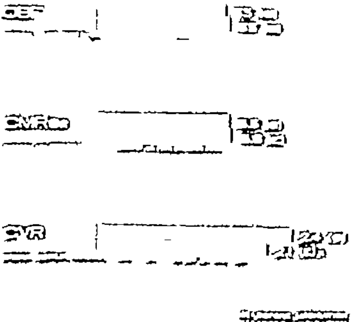


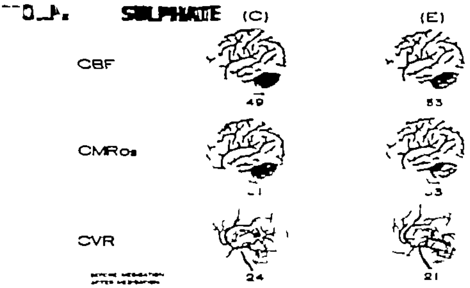


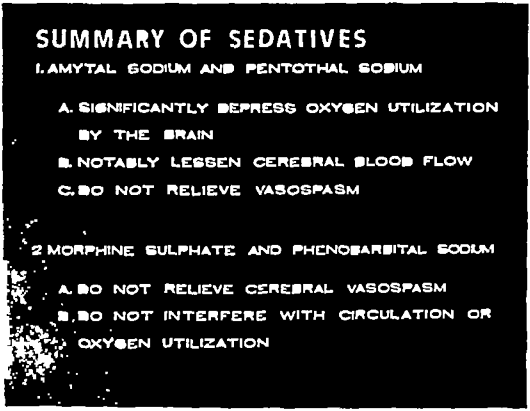
PHENOBARBITAL SODIUM

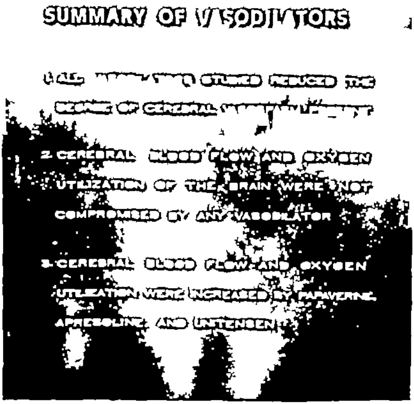


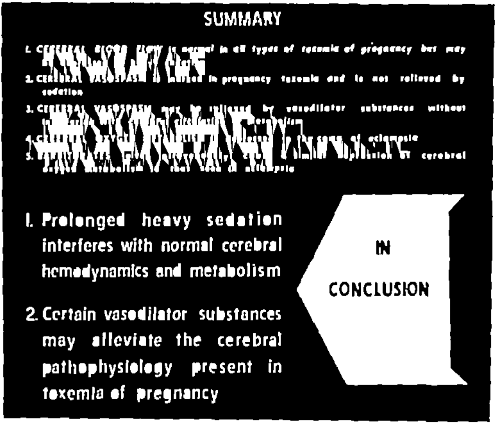
VERATRUM VIRIDE




SULPHATE
(C)
(E)
CBF
49
53
CMRO2
CVR
24
21


SUMMARY OF SEDATIVES
1. AMYTAL SODIUM AND PENTOTHAL SODIUM
A. SIGNIFICANTLY DEPRESS OXYGEN UTILIZATION BY THE BRAIN
B. NOTABLY LESSEN CEREBRAL BLOOD FLOW
C. DO NOT RELIEVE VASOSPASM
2 MORPHINE SULPHATE AND PHENOBARBITAL SODIUM
A. DO NOT RELIEVE CEREBRAL VASOSPASM
B. DO NOT INTERFERE WITH CIRCULATION OR OXYGEN UTILIZATION


SUMMARY OF
STUDIED REDUCED THE
DEGREE OF CEREBRAL
2. CEREBRAL BLOOD FLOW AND OXYGEN UTILIZATION OF THE BRAIN WERE NOT COMPROMISED BY ANY VASODILATOR
3. CEREBRAL BLOOD FLOW AND OXYGEN UTILIZATION WERE INCREASED BY PAPAVERINE, APRESOLINE, AND UNITENSEN


SUMMARY
1. CEREBRAL BLOOD FLOW is normal in all types of toxemia of pregnancy but may
2. CEREBRAL VASOSPASM is marked in pregnancy toxemia and is not relieved by sedation
3. CEREBRAL VASOSPASM may be relieved by vasodilator substances without
4. of eclampsia
5. cerebral
1. Prolonged heavy sedation interferes with normal cerebral hemodynamics and metabolism
2. Certain vasodilator substances may alleviate the cerebral pathophysiology present in toxemia of pregnancy
IN CONCLUSION

Cervical Carcinoma in Situ: Difficulties in Differential Diagnosis.

Jacob Hoffman, Jefferson Medical College Hospital, Philadelphia.

Charts and posters present the histological findings among more than 10 000 cervical biopsy specimens. Particular emphasis is placed on those specimens fulfilling the accepted cytological criteria for group O carcinoma or carcinoma in situ. The associated clinical findings and follow-up records of these cases are tabulated and possible etiological role of inflammatory processes, pregnancy and other hyperhormonal states is suggested. To demonstrate the practical difficulties in the differential diagnosis between true early malignant and benign carcinomimetic lesions, their respective cytological and other characteristics are listed and microphotographs of sections from both types of cases are presented. Histological differences, which may aid in the differential diagnosis, are pointed out.

Reduction of Maternal and Fetal Mortality by Adequate Management of Labor

R. E. Nicodemus, L. F. Ritmiller, I. L. Messmore, and H. R. Dailey, Geisinger Memorial Hospital and Foss Clinic, Danville, Pa.

The exhibit shows the management of the patient while in labor and some of the complications that may arise during labor and how they are managed. A reduction in maternal and fetal mortality can be accomplished by the constant attendance of the obstetrician during labor and delivery. A well-planned department of obstetrics with modern equipment is the important prerequisite in reduction of maternal and fetal mortality.

Current Practical Gynecology

Walter J. Reich, Mitchell J. Nechtow, Morris W. Rubinstein, and Jerome B. Reich, Chicago Medical School, Cook County Hospital, and Cook County Graduate School of Medicine, Chicago.

This exhibit deals with problems as they arise in everyday practice of gynecology, be they in general practice or in a specialty. It also deals with the diagnosis, differential diagnosis, and management of conditions in children (pediatric), in adolescents or teen-agers, in childbearing women, in geriatric patients, and psychosomatic problems. Acute and chronic gynecologic conditions requiring surgery are discussed, in differential diagnosis.

New Concepts in Diagnosis and Treatment of Toxemia of Pregnancy

Frank A. Finnerty Jr., Georgetown Medical Center, Washington, D. C.

The first prerequisite for intelligent management, therapy and long term prognosis of any disease is accurate diagnosis. Recent observations on 820 patients followed in the toxemia clinic of the District of Columbia General Hospital have shown that hypertensive vascular disease and pyelonephritis frequently masquerade as toxemia of pregnancy. Studies by the author have shown that differentiation between pure toxemia of pregnancy and hypertensive vascular disease is apparent by examination of the retinas. Thirty patients with albuminuria and edema were found to have pyelonephritis documented by microscopic urinalysis and urine culture. Therapy with appropriate antibiotics promptly resulted in clearing of the toxemia in these cases. Though 95% of the patients referred to the clinic by the obstetricians were originally diagnosed as having toxemia, only 14% actually had toxemia by our criteria. The indications and contraindications of hypotensive therapy in early and late toxemia, the proper selection of agents, and the indications for hospitalization and/or induction of labor will be presented in light of the above.

Technique Employing Oxytocics in the Third Stage of Labor.

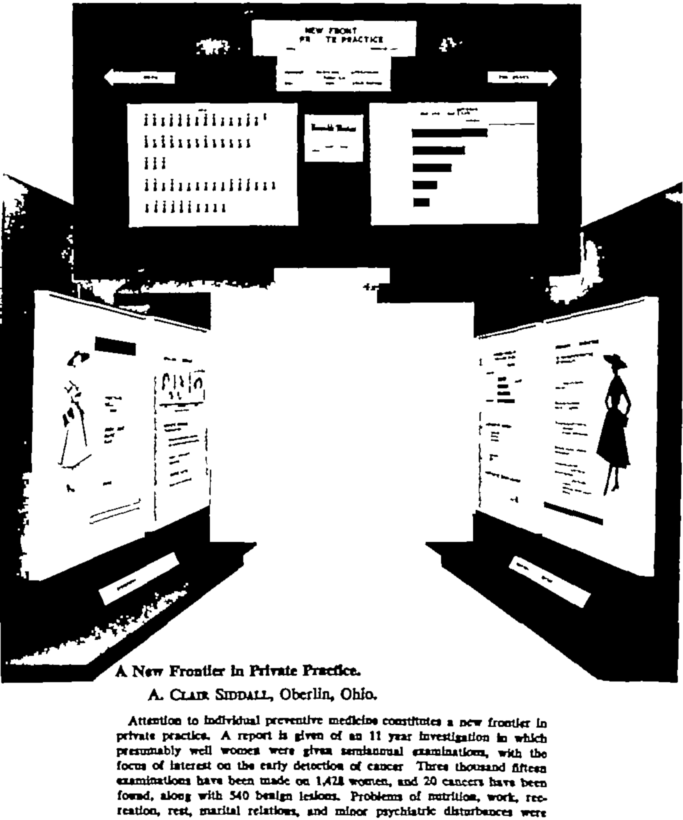
Herschel S. Murphy, Rahway Hospital, Roselle, N. J.

The exhibit depicts the chemistry of oxytocics and their application to the process of labor. A description of labor processes is presented along with postpartum treatment. Statistics of cases are evaluated in view of the various types of deliveries.

Variation in Depth of Implantation of the Human Ovum.

Richard Torpin, Medical College of Georgia, Augusta, Ga.

The exhibit depicts placentation of five hypothetical variations in depth of nidation of the human ovum, each of which results in a distinct type of placenta. Relative percentage figures for each type have been worked out based upon water distention of the fetal, term and abortion, sacs partially submerged in a tank of water. The relationship of the extremely deep implantations to spontaneous abortion or to premature separation of the placenta is demonstrated. In addition explanation of bilobation, which occurs in 8% of all pregnancies, becomes quite apparent.



A New Frontier in Private Practice.

A. Clair Siddall, Oberlin, Ohio.

Attention to individual preventive medicine constitutes a new frontier in private practice. A report is given of an 11 year investigation in which presumably well women were given semiannual examinations, with the focus of interest on the early detection of cancer. Three thousand fifteen examinations have been made on 1,428 women, and 20 cancers have been found, along with 540 benign lesions. Problems of nutrition, work, recreation, rest, marital relations, and minor psychiatric disturbances were considered and treated thus carrying out individual preventive medicine in the private practice of gynecology.

The Patient

A
PRESUMABLY
WELL
WOMAN

DOES SHE
HAVE
CANCER ?

IS
GIVEN
THE
FOLLOWING
CARE

ANALYSIS OF HISTORY

DIET

RECREATION
AND SEXUAL ACTIVITY

REST

COMPLETE PHYSICAL EXAMINATION

Hemoglobin determination urinalysis and cytological spread from the uterine cervix

Biopsies of suspect lesions

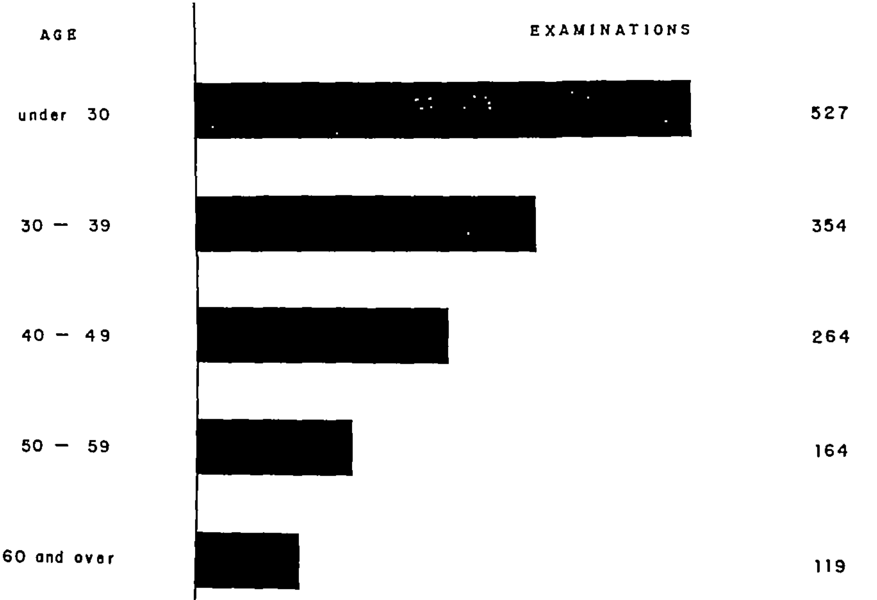
Chest X rays

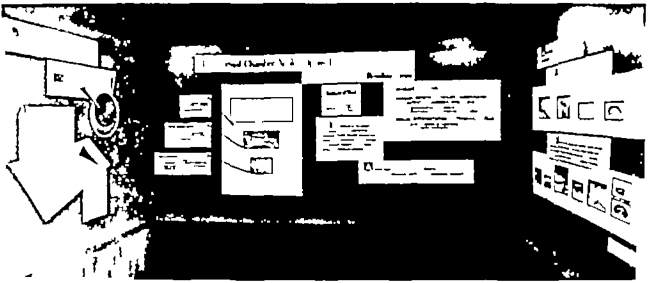
SIX MONTHS LATER

Breast-pelvis examination

FIRS AND RETURN VISITS

RELATION BETWEEN AGE AND FIRST EXAMINATION





A New Concept of the Development of the Angle of the Anterior Chamber of the Human Eye

[illegible] and [illegible] Allen, Iowa City, Iowa

[illegible] angle opens [illegible] begin[illegible] in [illegible] month [illegible] with the [illegible] measurable [illegible] of tissue [illegible] trabecula [illegible]

[illegible] growth, the [illegible] fifth month [illegible] of growth [illegible] this period supplies the [illegible] the mass and spatial [illegible] relationships [illegible] angle region. Differential growth [illegible] responsible for the unequal growth.

[illegible] normally progresses [illegible] differentiation [illegible] this tissue [illegible] not adhere to each other [illegible] form long fibers [illegible] normally differentia[illegible] the same [illegible] cells might be [illegible] innermost layer of [illegible] evidence to adherence.

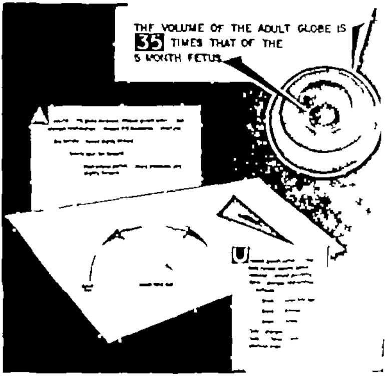
The layers of [illegible] formerly interpreted as embryonic mesoderm undergoing atrophy and absorption are now seen to be cells under tension due to the occasional cells aligned across the angle. For the most part these adherences are tenuous and fall under the force of increased tension during further development.

On the new basis mesodermal remnants, according to the accepted meaning of the term, do not exist. Instead it is shown that persistent adherence of the iris root to the trabecular tissue can give the gonioscopic appearance formerly attributed to embryonic mesodermal remnants. Poor differentiation and organization of the trabecular region can be seen as the most likely cause of the persistent adherence. It may itself or through the adherence, or both, cause or contribute to developmental glaucoma with which both are often associated.

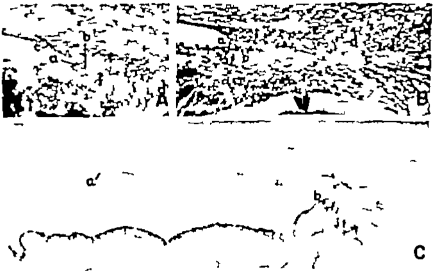
Other tissues in the chamber angle also formerly thought to be remnants of [illegible] process are shown to develop from groups of [illegible] cells. These appear to be [illegible] related to [illegible] of Schlemm and pectinate ligament of lower mammals. Such groups are found [illegible] in the 91 mm embryonic stage. In embryonic eyes they appear in the same percentage as they are seen in adult eyes in clinical or anatomic study.

The persistent adherence and poor differentiation can occur together with pectinate ligament elements, in which case the gonioscopic and histologic pictures can be quite complex.

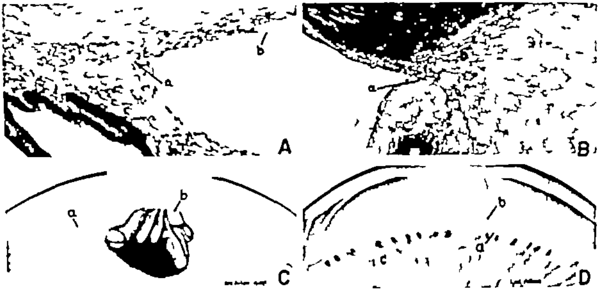
[illegible] Department of Ophthalmology, College of Medicine, [illegible] Iowa City, Iowa



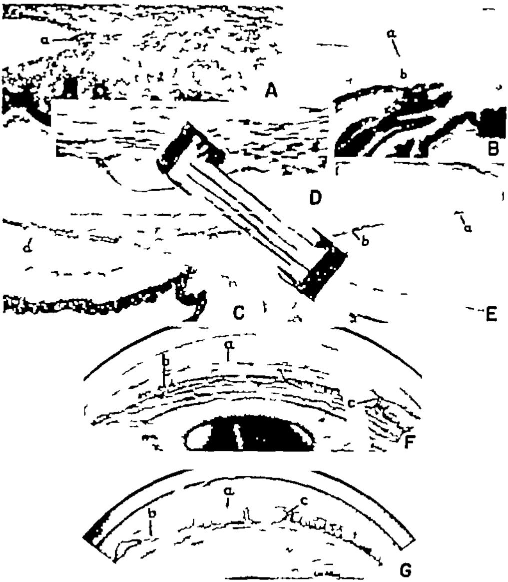
Changes in tissue relationships contributing to cleavage of the angle: As the olume of the globe increases, nequal growth changes relationships of masses and boundaries of structures. The scleral spur and the nterior insertion of the meridional ciliary muscle mov noticeably forward nd outward from the center of the globe, wh le the iri root and internal nterior margin of the ciliary body mov much less. A comparison of geometrically simplified cross sections of the fifth month fetal and the ad lt ciliary bodies shows the changed relations of the three major boundary planes That adjacent t the iris root changes plane about 80° rotating backward nd inward around the scleral spur insertion as f lcrum thus pulling the chamber angle open



Size increase, differentiation and cleavage are seen: *A* 120 mm. embryo eye; *a*, apex of fetal chamber angle *b* large granular nuclei of developing trabecular cells, *d* *f* outline area of differentiating trabecular tissue. *B* fifth-month fetal eye: apex of fetal chamber angle; *b* developing cleft with trabecular tissue bove nd iris-ciliary body tissue below: potential apex of adult angle; *d* scleral spur *C* adult chamber angle edge of Descemet membrane (no prominent border ring of Schwalbe is present; *b* apex of adult chamber angle.



Abnormal dev lopment seen in development l gla coma with fa lty cell differentiation nd pers ent adherence of the root of the iris t the trabecula tissue (incomplete lea ge) f fetal ey (some time f er the fifth mon h) persistent adherence *b* prom nent ing of Schw lbe *B* ey of h ld with dev lopmental glaucoma, per si en adherence *b* disorga ized trabecula tissue gonioscopic iew of fellow eye that how i *B* persistent adherence *b* trephine opening, ciliary processes inca ra ed, nd peripheral iridectomy *D* gonioscopic iew of ey of child with dev lopmental gla oma persistent adherence *b* indistinct anterior boundary of trabecular tissue probably indicating poor d fferentiation iris trophy



Abnormal development ith prominent anterior border ring of Schwalbe and pectinate ligament features; *A* chamber angle of 91 mm. embryo; cells already forming prominent ring of Schwalbe and possibly pectinat ligament strand, excessive to requirement of normal huma eye. Blue staining collagen fibers are clearly seen in Mallory stain *B* fetal eye (courtesy of R. N Shaffer and A E Maumenee) prominent ring of Schwalbe *b* clear-cut cleavage with imprint of ring in iris root. *C* adult eye prominent ring of Schwalbe. *D* ring of Schwalbe in *C* viewed nder high power *E* adult eye prominent ring of Schwalbe *b* pectina ligament strand. *E*, gonioscopic iew of adult eye without glaucoma, *a*, prominent ring of Schwalbe *b* minimal persistent adherence, pectinate ligament strands. *G* gonioscopic view of d lt eye with glaucoma, prominent ring of Schwalbe, *b* extensive persistent adherence; *c*, pectinate ligament strands.

Pupillography: Method and Diagnostic System.

Otto Lowenstein, Institute of Ophthalmology, New York, and National Institute of Neurological Diseases and Blindness, Bethesda, Md.

Damage the sympathetic or parasympathetic centers or pathways that normally control the iris results in changes from the normal pupillary reflex pattern. The type of change is characteristic of the site of the lesion. Therefore, accurate recording of pupillary movements permits detection of pupillary pathology and localization of the causative lesion. A survey is given on the development of pupillographic methods and results during the last 30 years, stressing the following subjects: (1) laws of normal pupillary innervation, fatigue and recovery, aging, and pharmacodynamics; and (2) modifications of the reflex pattern due to lesions in the optic nerve, optic chiasm, optic tract, anterior midbrain, certain areas of the interbrain, cervical cord, and peripheral sympathetic chain. Clinical cases are analyzed.

Congenital Blindness: Clinical and Pathological Study

Alleta N. Barber, G. P. Hodge, and R. J. Muelling Jr., Louisiana State University School of Medicine and Charity Hospital of Louisiana, New Orleans.

The exhibit shows illuminated view boxes containing colored transparencies illustrating the histopathology of arious types of congenital abnormalities of the eye. I many instances, illustrations of the normal development of the eye are used to indicate the time at hich the abnormality occurred.

The Corneal and Retinal Meridians in True and False Torsion.

Joseph I. Pascal, New York Polyclinic Medical School and Hospital, New York.

Under certain conditions the eyes in their primary position undergo wheel like rotation bout the anteroposterior axis. This is termed true torsion and embraces cyclophoria and cyclotropia. I this movement the vertical and horizontal meridians of the cornea and of the retina rotate in the same direction. When the eyes move into an oblique secondary position there results an inclination of the corneal and retinal meridians termed false torsion. There has been some controversy as to hether in false torsion the corneal and retinal meridians tilt in the same direction or in opposite directions. This exhibit shows that they tilt in the same direction, though possibly to an unequal degree.

Toxoplasmosis.

Ralph W. Ryan, Leon Jacobs, Maryjane K. Cook, William M. Hart, James F. O'Rourke, Gilbert Iser, and John J. Culligan, National Institutes of Health, Bethesda, Md.

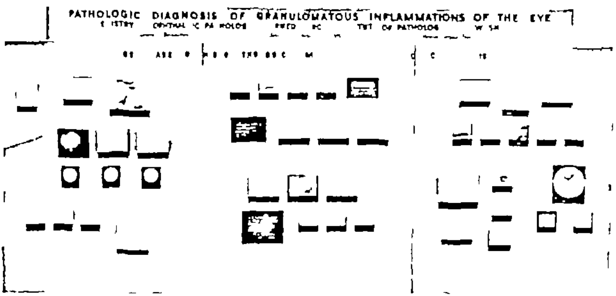
The exhibit shows primarily the ocular manifestations of toxoplasmosis, with review of the systemic disease forms. It also depicts various diagnostic tests for toxoplasmosis by means of color drawings, as well as color illustrations showing the biology and epidemiology of the parasite and the geographical distribution of the disease.

Changing Problems in Prevention of Blindness.

Franklin M. Foote and C. Edith Kerby, National Society *for the Prevention of Blindness, Inc., New York.*

The results of statistical studies show the effectiveness of prevention procedures to date as ell as the continuing need for research, education, and services to effect an over-all reduction in the incidence of blindness.

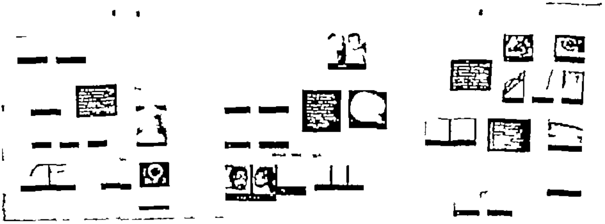
HONORABLE MENTION



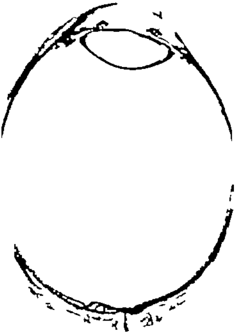
Specific Clinicopathological Types of Granulomatous Inflammation.

LORENZ E. ZIMMERMAN and JOHN H. BICKERTON, Armed Forces Institute of Pathology Washington, D C., and HELENOR CAMPBELL WILDER, San Francisco.

The exhibit demonstrates that specific types of granulomatous inflammation fall into two groups. One of these includes the various infectious diseases in which the specific etiological agents are demonstrable in the tissues by histopathological or microbiological techniques (bacteria, fungi, protozoa, and helminths). The other group includes those entities in which the diagnosis is based on a combination of a typical clinical syndrome and characteristic histopathological changes (sarcoidosis, rheumatoid diseases, sympathetic ophthalmia, etc.).



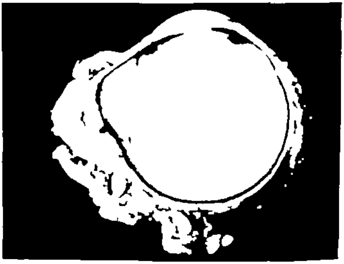
DIAGNOSIS BASED ON HISTOPATHOLOGIC DEMONSTRATION OF SPECIFIC ETIOLOGIC AGENT



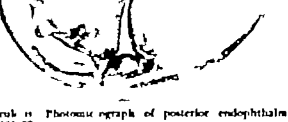
Syphilis Inflammation chiefly I anterior segment AFIP 42986.

Syphilis. Neuroretinitis and Endophthalmitis. AFIP 114775.

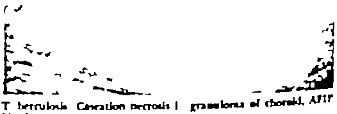
Treponema I Choroid W rthlnstarry stain. AFIP 114775



T berculosis Gross specimen showing segmental panophthalmitis with epibulba granuloma AFIP 641838.

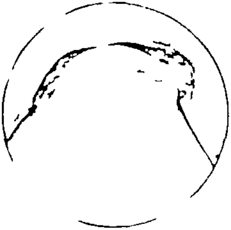


T berculosis Photomicrograph of posterior endophthalmitis. AFIP 1" 97



T berculosis Caseation necrosis I granuloma of choroid. AFIP 18 397

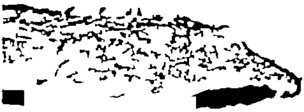
Tuberculosis: Panophthalmitis with rupture of globe, AFIP 84559



T berculosis: Iridocyclitis and ciliary staphyloma, AFIP 539690

Tuberculosis. Acid-fast bacilli in Epithelioid cell. AFIP 185507

Leprosy: Iridocyclitis, AFIP 125164.



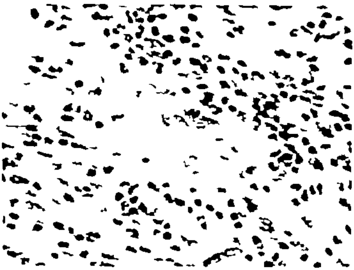
Leprosy: Lepra cells and globus in iris, AFIP 217637

Leprosy: Lepra cells and globi in ciliary body AFIP 125164.

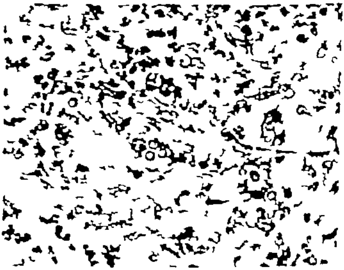
Leprosy: Acid fast bacilli in lepra cells and globi, AFIP 296202.

78 YR OLD WOMAN WITH IRITIS
OF 4 MONTHS DURATION PATIENT
FOLLOWED 8 YEARS WITHOUT
SHOWING OTHER EVIDENCE OF
CRYPTOCOCCOSIS AFIP
ACC 161184 CONTRIBUTED BY
DR R J GRAY PITTSBURGH PA

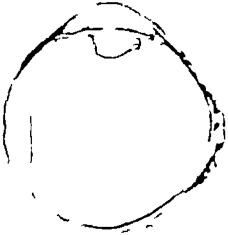
Cryptococcosis: Chorioretinitis. AFIP 599915.



Cryptococci in giant cell. H & E. AFIP 599915

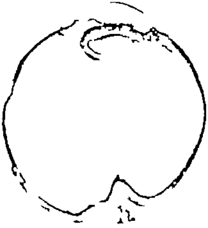


Cryptococci in retina. Mucicarmine stain. AFIP 599915



Toxoplasmosis Segments [illegible] AFIP 171510

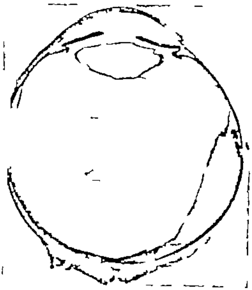
Chorioretinitis Crescent form of Toxoplasma in retina (arrow) AFIP 70313



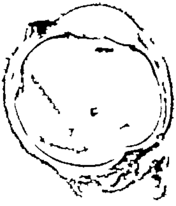
Blastomycosis. Iridocy l tis AFIP 87260.

Blastomycetes i granuloma of i is, AFIP 87260

Intracellular blastomyces ith typical budding, AFIP 87260

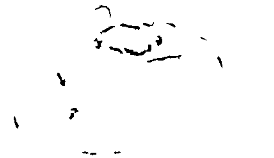


Cryptococcosis. Photomicrograph of mucoid retinal mass nd chorioretinitis, AFIP 161194

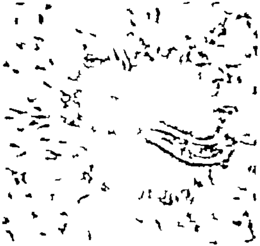


Cryptococcosis. Gross specimen howing massi granuloma of retina and chorioretinitis, AFIP 599013

Choroidal lesions of disseminated cryptococcosis in patient w th malignant lymphoma AFIP 202406.

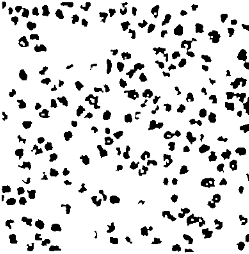


H lmlnthiasis C t nulum cont ng nem le la lt eous (ns) AFIP ?07?51



H lm t ia is Nematode larva retinal f nel AFIP 69623.

Cy ticercosis. Endophthalmitis with retinal det hment, AFIP 198704



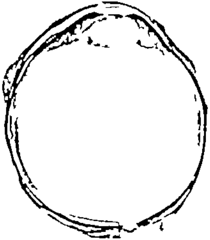
Nematodiasis: Endophthalmitis ith eosinophilia la hue to diagnosis, AFIP ?98503.

H lmin hias Nema ode la l itreous, AFIP 19??61

Cy ticercosis: Hooklet of cysticercus, AFIP 198?04.

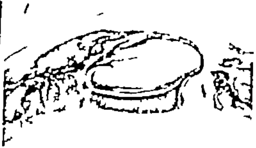
Cysticercosis. Hooklets of Cysticercus, AFIP 198704.

H lml thiasis: Nematode lar l cyclitic membrane, AFIP 299903.



Bo k sa oid E h Es. AFIP 90581

Boeck sa oid. Non ase ing pi l oid ber le l lary l l AFIP 90581



Sa oidosis l kk lids. AFIP l 4925

idosis Non aseating epithelioid tuber les l lary ba l AFIP 165028

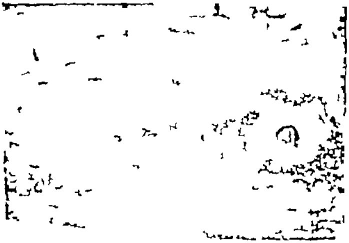
Sa coidosis Non aseating epi helioid ber les l skin. AFIP 165028.

Sarcoidosis on ase ting pithelioid t ber les l lymph nod AFIP 165028.

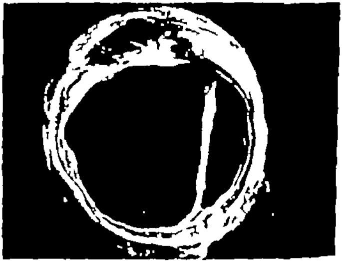
Chest ray Symmetrical hila adeno-pathy nd pulmonary I filtrates of sar coidosis. AFIP 165028.

Post Tra ma ic I flammation Foreign body reaction to cilium AFIP 85350

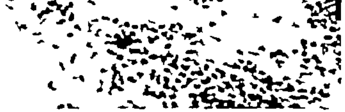
Post-tra matic Inflammation Foreign body reaction t cotton fibers, AFIP 99767



Post umati inflamm ion Lens-induced endophthalmitis AFIP 98526



Post tra matic inflammation Sympathetic uveitis, AFIP 65021



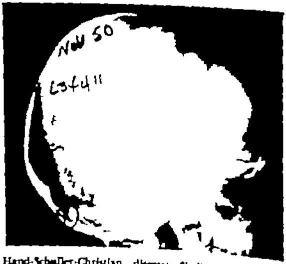
S mpathetic uvei is Prolifer tion of epithelioid nd gia cells h p gment phagocy os AFIP 65021

E oph halmo secondary orbit l invol emen S II nd Schul ler Chri ia disease Con bu ed by Dr F ederick C Bert Georgetow University

Hand Schuller-Christia Disease Corneoscleral and anterior uveal involvement AFIP 634411

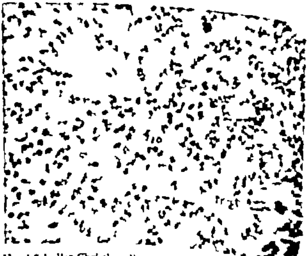
Hand Schuller-Christian disease Granulomatous lesion Eosinophilia in limbal region. AFIP 634411

7 YR OLD BOY ITH CHRONIC
OTORRHEA AND DESTRUCTIVE
LESIONS IN SKULL AND MANDIBLE;
EYE ENUCLEATED BECAUSE OF
GRANULOMATOUS INFLAMMATORY
PROCESS UNRESPONSIVE TO
ANTIBIOTICS AND CORTISONE
AFIP ACC 634411 CONTRIBUTED
BY DR E M PARKHILL
ROCHESTER MINNESOTA



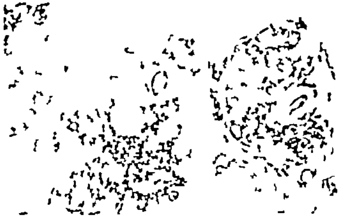
Hand-Schuller-Christian disease Sk ll -ray showing destructi lesions in temporal bones (arrows) AFIP 634411

Hand Schuller-Christian disease prolifera ion of histiocytes nd eosinophils i cornea AFIP 634411



Hand-Schuller-Christia disease P oliferation of h eosinophils in scalp lesion AFIP 634411

Sever exoph halmos secondary t orbital inv l ement in Let terer S d sease AFIP 04091 contributed by Children's Hospital W shington, D.C.



Biopsy of orbital fat showing characteristic Non lipid histiocytosis. AFIP 704091

C taneous non l pid h stiocy osi of Let erer d sease AFIP 452516

L mph node inv l ement AFIP 482516.

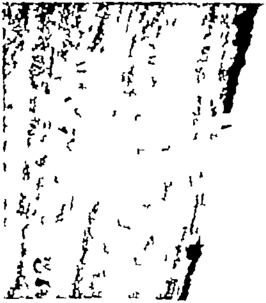
Dest ct lesion of sphenoid AFIP 482516

Scleromala ia perforans Conjunct l I jection depressed altered l mbal les on O.D. AFIP 651115

54 YR OLD WOMAN WITH RECURRENT DISABLING POLYARTHRITIS URTICARIA AND PHOTOPHOBIA BILATERAL CONJUNCTIVITIS EPISCLERITIS AND FOCI OF SCLEROMALACIA AT LIMBUS PERFORATION OF LESION IN O S LED TO ENUCLEATION AFIP ACC 634415 CONTRIBUTED BY DRS C W BROWNING AND M J REEH PORTLAND OREGON

Scleromalacia perforans. Conjuctival and scleral injection, softened limbal lesions with perforation O S AFIP 634415

Scleromalacia perforans: Destructive corneoscleral lesion. AFIP 634418.

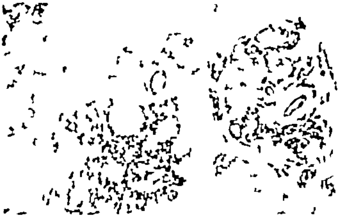


Scleromalacia perforans. Granulomatous formation about necrotic collagen in sclera. AFIP 634415

Scleromalacia perforans Epithelioid and giant cell response. AFIP 634415.

Brawny Scleritis. Bilateral corneoscleral thickening inflammatory process. AFIP 183011

Severe exoph halmos secondary t orbital invol ement I Letterer Si dise se AFIP 704091 contributed by Children Hos pital, W shington D.C.



Biopsy of orbital fat showing characteristic Non lipid histiocytosis. AFIP 704091

C taneou non lipid h stiocytosis of Letterer Siw d sease AFIP 482316

L mph node invol ement. AFIP 482316.

Destruct les on of phenoid. AFIP 482316

Scleromalac perforans. Conjucti l injection depressed sof ened limbal lesions O.D AFIP 651415

The Use of Radioactive Phosphorus (P-32) in the Diagnosis of Tumors of the Eye and Its Adnexa.

IRWIN S. TERNER, L J EISENBERG and I. H. LEOPOLD, Wills Eye Hospital, Philadephia.

The exhibit describes the rationale, technique, and results in over 250 cases where the uptake of radioactive phosphorus was employed as an aid in diagnosis in tumors of the eye and its adnexa. Charts, graphs, and Kodachrome photographs will demonstrate the results obtained with the test. A large, plastic model-eye containing various concentrations of radioactive phosphorus will be placed near a radioactive monitor so that the technique of the test may be demonstrated to interested viewers with the use of a Geiger-Muller tube.

RATIONALE FOR USE OF (P-32) IN THE DETECTION OF OCULAR TUMORS

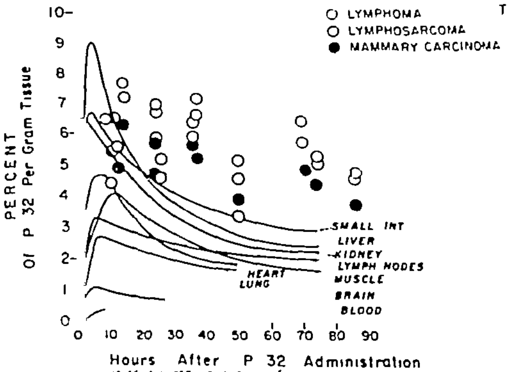
P-32 THE BEST AVAILABLE ISOTOPE

- HALF LIFE IS SHORT (14 DAYS)
- EASY TO HANDLE IN THE LABORATORY
- PURE BETA RAY EMITTER
- RANGE IN TISSUE UP TO 7 MM
- RELATIVELY NON-TOXIC DOSAGE (500 & 750 UC)
- DETECTABLE DIFFERENCE IN UPTAKE BETWEEN MALIGNANT AND NORMAL TISSUE
- ELIMINATES MASKING EFFECT OF GAMMA RAY (DIIODOFLUORESCEIN)

MALIGNANT TUMOR TISSUE RETAINS P32 FOR LONGER PERIODS OF TIME AS COMPARED WITH NORMAL TISSUE

• PROVEN EXPERIMENTALLY IN VITRO BY JONES CHAIKOFF AND LAWRENCE WITH STUDIES IN MICE CORROBORATED BY PRESENT TUMOR STUDY IN VIVO

PHOSPHORUS METABOLISM Of Neoplastic Tissues



JONES CHAIKOFF AND LAWRENCE (J BIOL CHEM 133 310 1940)

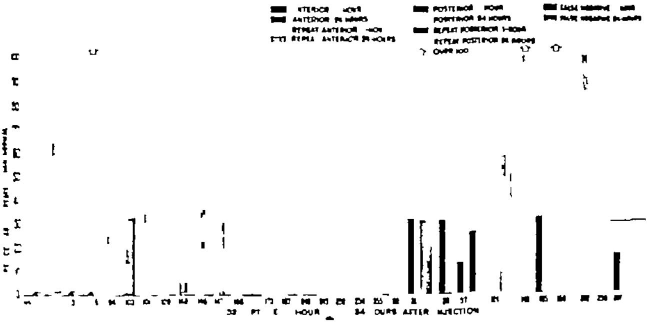
Jones, Chaikoff and Lawrence studied the phosphorus metabolism of the soft tissues of normal [illegible] well [illegible] malignant tissues transplanted into these same animals with P. They proved that once neoplastic tissues take up P32 they show pronounced capacity for retaining it over long periods of time in comparison with normal tissues.

4

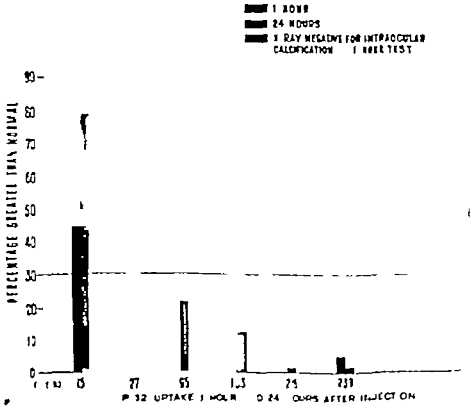
SUMMARY OF 262 CASES

LESION	TOTAL	POSITIVE	NEGATIVE	SURGICAL OR PATHOLOGICAL CONFIRMATION
INTRAOCULAR MALIGNANCIES				
MALIGNANT MELANOMA	30	27	3	30
RETINOBLASTOMA	6	1	5	6
METASTATIC CARCINOMA	1	1	0	0
INFLAMMATORY RETINAL DETACHMENT	28	1	27	1
SEROUS RETINAL DETACHMENT	67	0	67	64
CHOROIDAL DETACHMENT	3	0	3	0
INFLAMMATORY LESIONS without DETACHMENT	15	1	14	2
IRIS LESIONS				
BENIGN MELANOMA	9	0	9	0
MALIGNANT MELANOMA	1	1	0	0
CYST	2	0	2	0
LEIOMYOMA	1	0	1	1
PIGMENT GRANULE IN ANGLE	1	0	1	0
GLAUCOMA				
PRIMARY	1	0	1	0
SECONDARY	6	0	6	3
ABSOLUTE	15	0	15	11
INTRAOCULAR HEMORRHAGE				
HYPHEMA	2	0	2	0
VITREOUS	15	0	15	0
CHOROIDAL	4	0	4	0
CATARACTS				
SENILE	4	0	4	2
COMPLICATA	10	1	9	3
PHTHISIS BULBI	2	0	2	2
MISCELLANEOUS INTRAOCULAR LESIONS	10	0	10	0
ADNEXAL LESIONS				
CANCEROUS MELANOSIS CONJUNCTIVA	1	1	0	1
PIGMENTED NEVUS CONJUNCTIVA	2	0	2	0
MUCOCELE	3	0	3	3
ORBITAL LESIONS				
PSEUDOTUMOR	2	0	2	2
LYMPHOSARCOMA	1	1	0	1
LACRIMAL GLAND INFLAMMATION	3	0	3	3
EXOPHTHALMOS	3	0	3	0
LID LESIONS				
METASTATIC MALIGNANT MELANOMA	1	1	0	0
CHRONIC GRANULOMA	2	0	2	2
PIGMENTED NEVUS	1	0	1	0
EPITHELIOMATA				
SQUAMOUS CELL	3	3	0	3
BASAL CELL	7	6	1	7

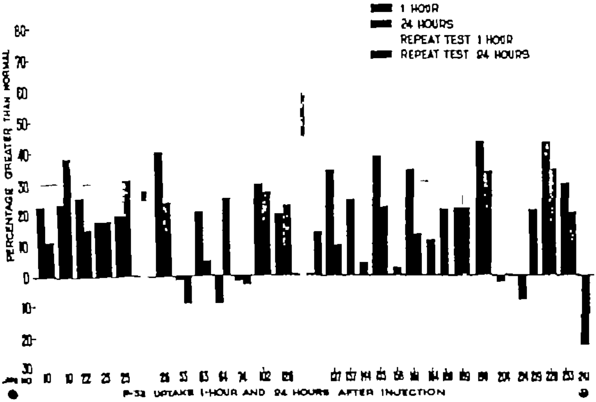
INTRAOCULAR MALIGNANT MELANOMA 30



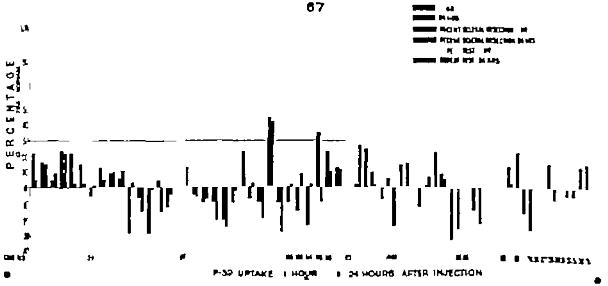
RETINOBLASTOMA 6



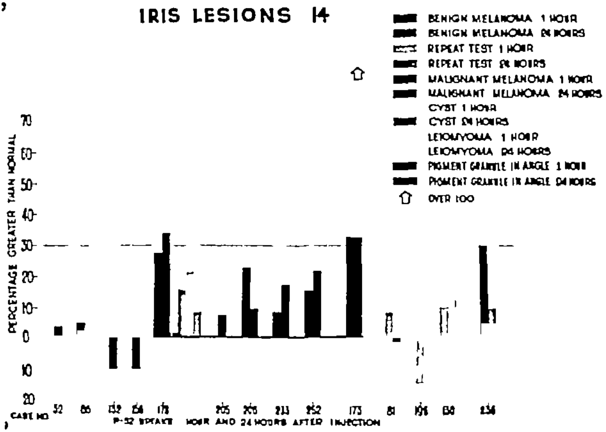
INFLAMMATORY RETINAL DETACHMENT 28



SEROUS RETINAL DETACHMENT 67

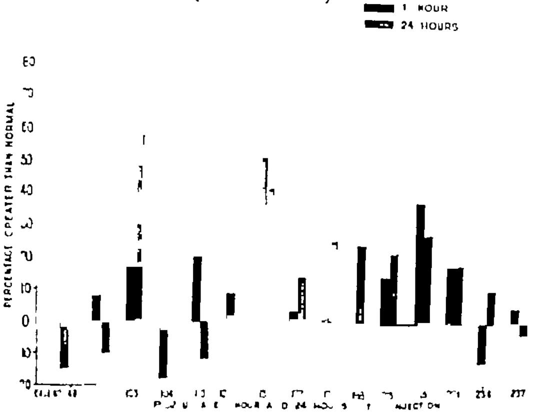


IRIS LESIONS 14

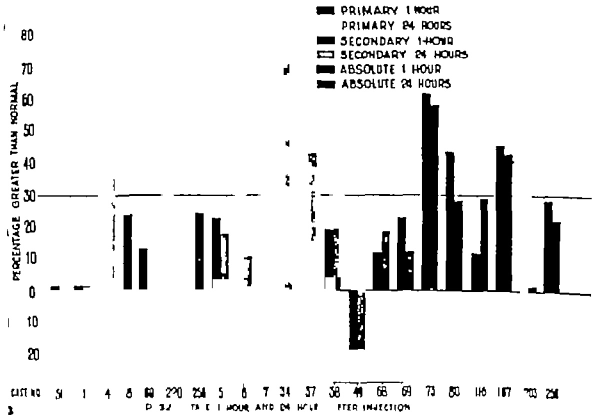


INFLAMMATORY LESIONS 15

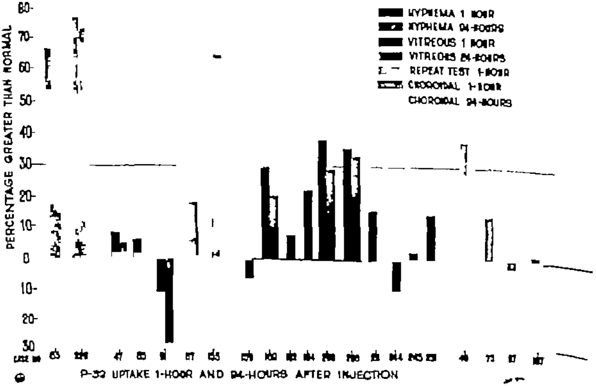
(without detachment)



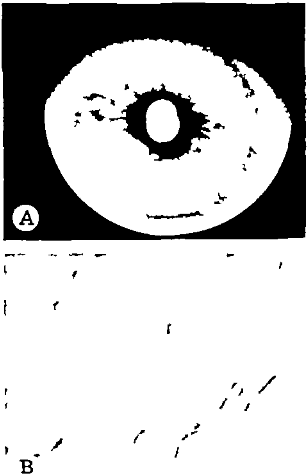
GLAUCOMA 22



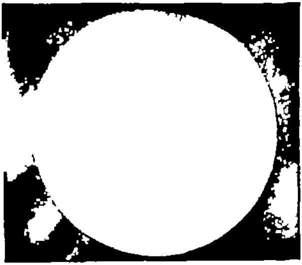
INTRAOCULAR HEMORRHAGE 21



Case 103 Scler nd ep scleri n nonspecific. P ptake test pc n (false positiv test) F obt ined f er patient dea h f external iew *B* microscopic section show ng round ll i filtrat on of sclera and episcleral tissues

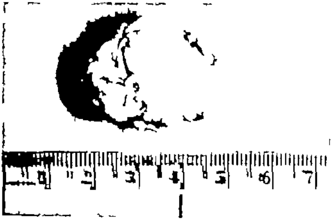


Case 150. Leiomyoma of the iris which occurred i a 21 yea -old whit sailor P^{32} uptake test wa negative. *A* external iew *B* PTA tai showing myoglial fibrils.



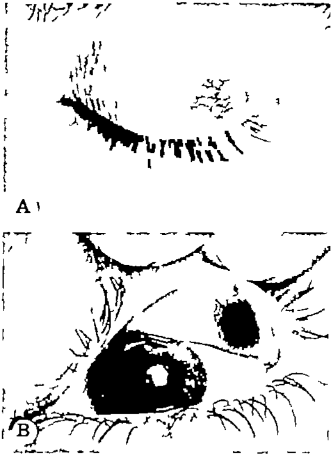
Case I flamma ory solid retinal detachment which occu red i ea -old whi man P^{32} upt k test was negativ

Case 61 Cancerous melanosis of conjuncti a. P^{32} ptake test was positiv

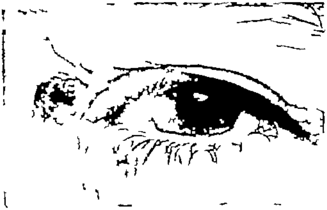


Case 53. Sarcoid of lacrimal gland. P^{32} uptake test was negative.

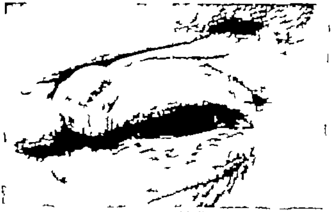
Case 115. Pigmented nevus of lids. P^{32} [illegible]ptake was negative. Lesion had been presen[illegible] since birth in [illegible] Negro female.



Case 16. Metastatic malignan[illegible]t melanoma. P^{32} uptake test was positive. Site of origin was right forearm. *A* lid closed, *B* lid everted.

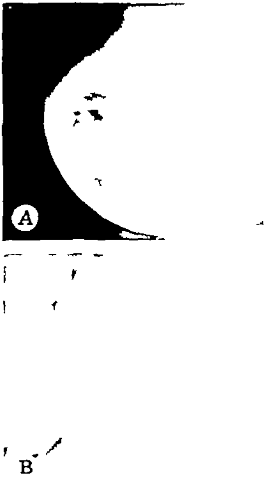


Case 141. Basal cell epithelioma. P^{32} [illegible]ptake test was negative.



Case 142. Recurrent basal cell epithelioma. P^{32} uptake test was positive.

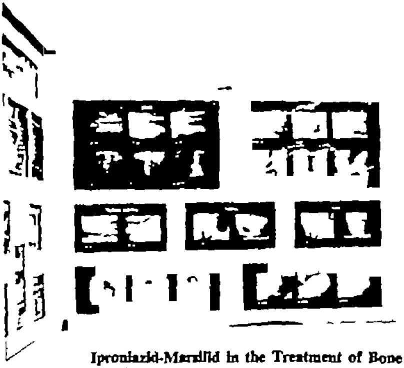
Case 103 Scler is nd episcleritis nonspecific. P ptake test as pi t false pos tiv test) F obt ned fter patient's death A ex ernal iew B microscopic section howing round ll infil ra ion of sclera nd episcleral tissues



Case 130. Leiomyoma of the iri 21-year-old whit sailor P ptal A external iew B PTA stai sho

Case I I ammatory solid retinal detachment which ecurred i I-yea -old whi man P32 ptak test was negative

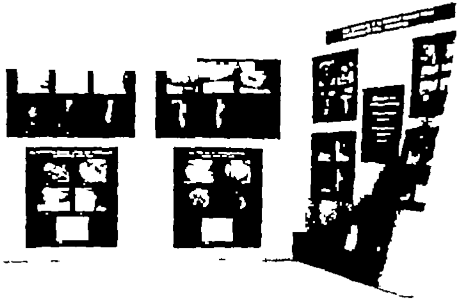
Case 61 Cancerous melanosis of conjunctiva. P was posi i



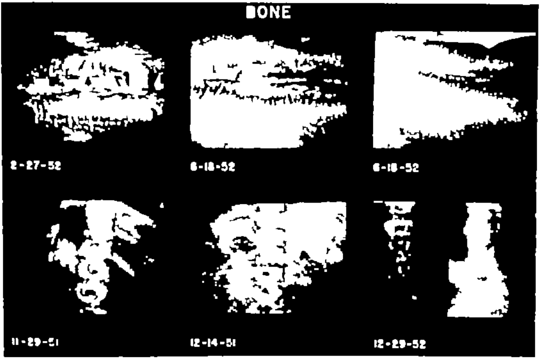
Iproniazid-Marsilid in the Treatment of Bone and Joint Tuberculosis.

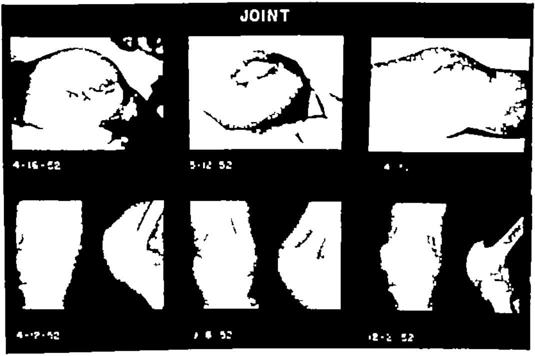
DAVID M. BOSWORTH, J. W. FIELDING, LAWRENCE DEMAREST and MARIO BONAQUIST, St. Luke's and Sea View Hospitals, New York.

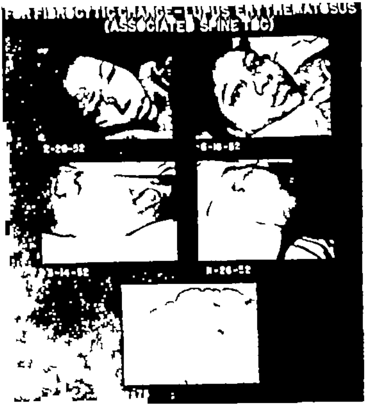
The exhibit shows photographs of tuberculous bone and joint lesions before, during, and after Iproniazid therapy with transparencies of x-rays of the same patients. A few tables are presented of toxicities, benefits, and results. The above are mounted on four panels.

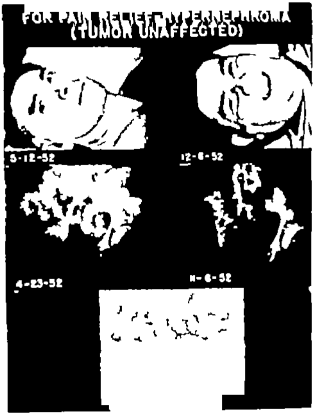


USE IN TUBERCULOUS LESIONS







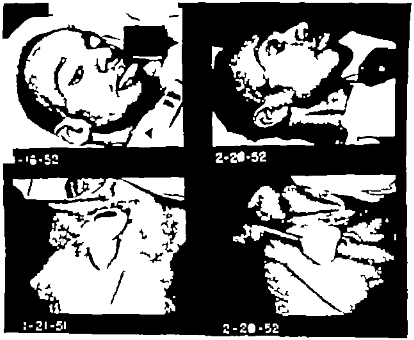


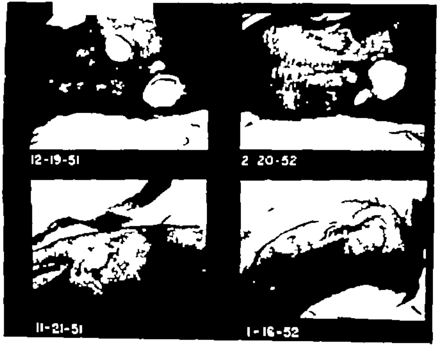
CASE EXHIBITING ALL OF THE BENEFITS OF IPRONIAZID THERAPY IN TUBERCULOSIS-YET DYING --- OVERWHELMED

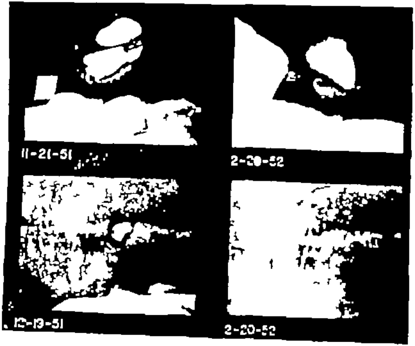
DYING AND DEAF WITH
1000 GRAMS OF STREPTOMYCIN

IMPROVED WITH MARSILID
FOR 12 WEEKS

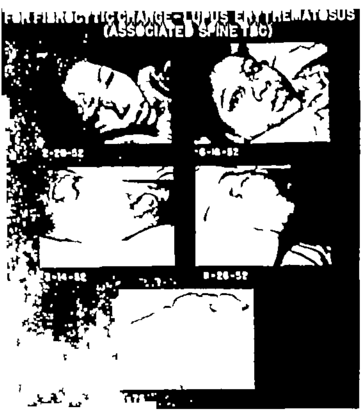
SUDDENLY DETERIORATED
AND DIED IN THE
13 TH WEEK

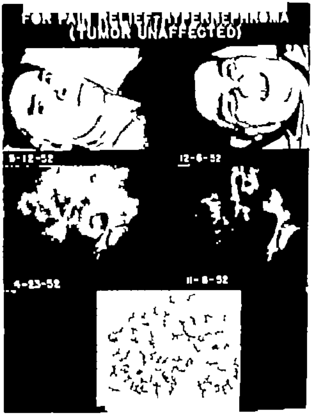

-16-52
2-20-52
-21-51
2-20-52


12-19-51
2 20-52
11-21-51
1-16-52


11-21-51
2-20-52
12-19-51
2-20-52

1-21-51
2-20-52
11-21-51
1-16-52





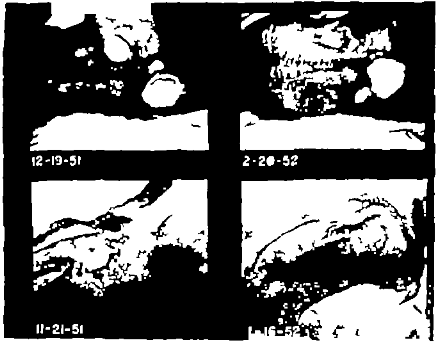
CASE EXHIBITING ALL OF THE BENEFITS OF IPRONIAZID THERAPY IN TUBERCULOSIS YET DYING --- OVERWHELMED

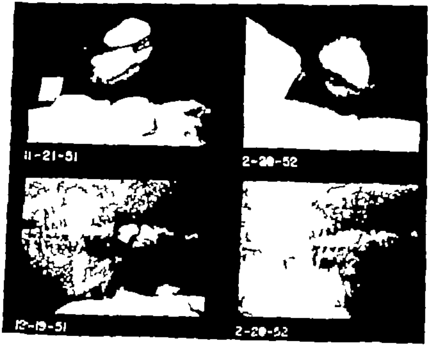
DYING AND DEAF WITH 1000 GRAMS OF STREPTOMYCIN

IMPROVED WITH MARSILID FOR 12 WEEKS

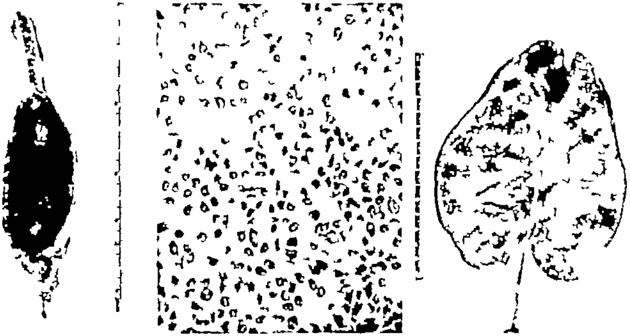
SUDDENLY DETERIORATED AND DIED IN THE 13 TH WEEK

1-16-52
2-20-52
11-21-51
2-20-52


12-19-51
2-20-52
11-21-51
1-16-52


11-21-51
2-20-52
12-19-51
2-20-52

11-21-51
2-20-52
11-21-51
1-16-52



PLASMA CELL MYELOMA 151 VERIFIED CASES

DIAGNOSIS

1 DIURNAL PAIN

2 PATH FRACTURE OF RIB

3 BACKACHE WITH PARAPLEGIA.

4 SOFT PALPABLE TUMOR

5. HYPERPROTEINEMIA

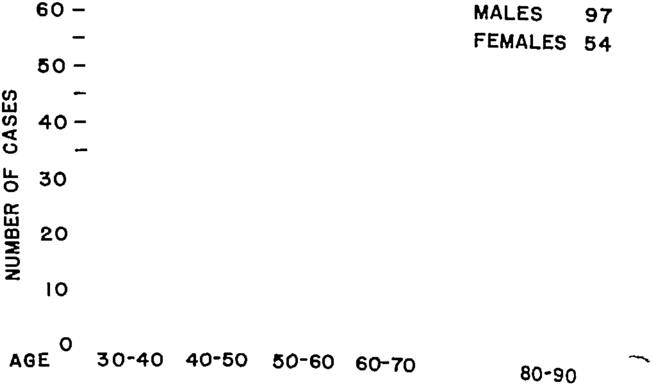
6 REVERSED A/G RATIO

7 UNEXPLAINED ANEMIA

8 ALBUMINURIA WITHOUT HYPERTENSION

9 BENCE JONES PROTEINURIA

10. STERNAL OR ILIAC MARROW



ILLUSTRATIVE CASES

HISTORY AND PHYSICAL EXAMINATION

HR MALE AGE 47
ADMITTED 3/12/48
FIRST SYMPTOM LOW BACK PAIN FOR 2 yrs
PAIN RT GROIN WITH WALKING FOR 6 months
EXAMINATION PAINFUL LIMITED MOTION OF RT HIP
SHORTENING RT LOWER EXTREMITY
X RAY MULTIPLE LESIONS
DIAGNOSIS ASPIRATION RT ILIUM

LABORATORY

	ADMISSION	5 years	TERMINAL
Calcium		8 3 mgms	10 8
P ase	2.5 units	4 6	1 8
Phosphorous	4 0 mgms	3 3	2 9
Protein	7 7 gms	8 8	
Hb	11 8 gms		
A/G		3 8/5 0	
Bence Jones	NEG		
BUN		12 8 mgm	122.8

TREATMENT

X RAY
1948 ILIUM 4110r
1951 PELVIS 4500r
SKULL 1600r
1952 ABDOMEN 4800r
1953 SKULL - 6300r
ILIUM - 1920r
STERNUM 1500r

URETHANE
TOTAL 1000 gms OVER 4 yrs 1950 54

P 165
TOTAL 1200 mgm TERMINALLY

COURSE

SLOW PROGRESSION WITH HEALING OF SEVERAL LESIONS AND PATHOLOGICAL FRACTURES AFTER IRRADIATION GOOD PAIN CONTROL FROM URETHANE
GRADUAL DETERIORATION WITH TERMINAL RENAL FAILURE
DIED 1/24/54 AUTOPSY
7 years 10 months after 1st symptom
5 years 10 months after admission

HISTORY AND PHYSICAL EXAMINATION

AP FEMALE AGE 49
ADMITTED 6/21/52
FIRST SYMPTON PAIN SACRUM FOR 10 months
EXAMINATION PALPABLE MASS SACRUM
X RAY SOLITARY SACRAL LESION ON SKELETAL SURVEY
DIAGNOSIS ASPIRATION SACRUM

LABORATORY

	ADMISSION	1 year 5 months	1 year 7 months
Calc um	9.0 mgms	14 6	15 8
P-ase	2 6 units	4 1	4 2
Phophorous	4 1 mgms	2 7	2 5
Protein	6 3 gms	7 1	6 9
Hb	9 8 gms		
Bence Jones	POS		
BUN			40 4 mgms

TREATMENT

X-RAY
TO MULTIPLE LESIONS
URETHANE
UNABLE TO TOLERATE
GENERAL SUPPORTIVE
TRANSFUSIONS

COURSE

PROGRESSIVELY DOWNHILL WITH MULTIPLE LESIONS DEVELOPING HYPERCALCEMIA WITH EVIDENCE OF RENAL INVOLVEMENT 6 months BEFORE DEATH
DIED 4/18/54 AUTOPSY
2 years 8 months after 1st symptom
1 year 10 months after admission

HISTORY AND PHYSICAL EXAMINATICN

MM MALE AGE 56 COLORED
ADMITTED 11/4/50
FIRST SYMPTOM PAIN DORSAL SPINE FOR 8 months
EXAMINATION PARAPLEGIA LEVEL D 5
X RAY SOLITARY LESION D 5 WITH COLLAPSE ON SKELETAL SURVEY BLOCK D-5 ON MYELOGRAM

LABORATORY

	ADMISSION	1 year 2 months	3 years 1 month
Calcium	9 6 mgms	10 3	10 7
P-ase	2 2 units	3 8	2.9
Phosphorous	4 0 mgms	4 0	
Protein	7 3 gms	7 0	8.3
A/G	3.9/3 4	4 4/2 6	
BUN	15 8 mgms	25 1	
Hb	11 8 gms		
Bence Jones	POS		

TREATMENT

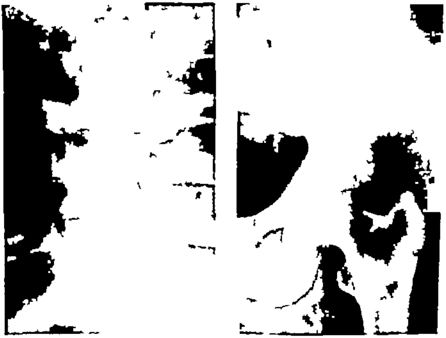
X-RAY
1950- DORSAL SPINE - 4900 r
1952- ILIUM - 2100 r

URETHANE
TOTAL 750 gms

SUPPORTIVE
TAYLOR BRACE

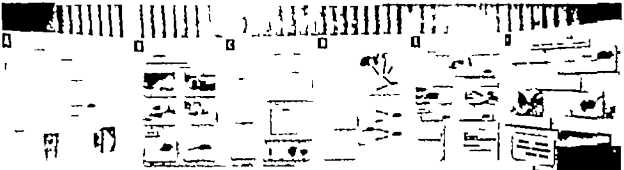
COURSE

RAPID IMPROVEMENT AFTER THERAPY AMBULATORY AND RETURNED TO WORK DEVELOPED LESIONS ILIUM AND SKULL 2 years LATER WITH TERMINAL UREMIA. DIED 12/15/53 AUTOPSY
3 years 9 months after 1st symptom
3 years 1 month after admission



SECTION ON PATHOLOGY AND PHYSIOLOGY

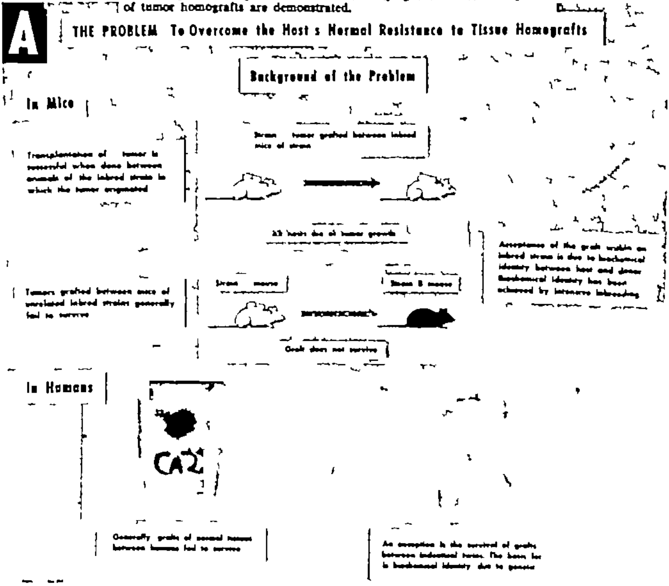
HEKTOEN SILVER MEDAL



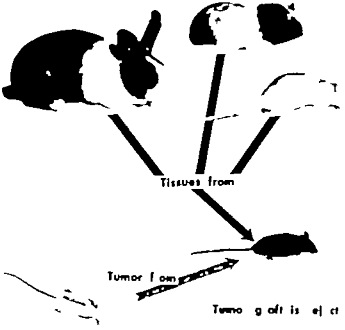
Experimental Procedures for Inducing Acceptance of Tumor Homografts.

George D Snell, Nathan Kaliss, and Andrew A. Kandutsch, R. B Jackson Memorial Laboratory Bar Harbor Maine.

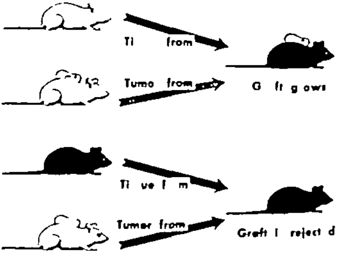
The main problem of reparative surgery is the hostile reactions set up in the recipient against grafted tissues from a foreign donor The demonstration shows successful experimental methods used in mice to abrogate their normal resistance to tumor homografts. These methods employ prior injection into the prospective host of suitable tissue preparations or antiserums to the tissues. The main lines of investigation directed toward elucidating the biological mechanisms underlying the induced acceptance of tumor homografts are demonstrated.



4 Tissues f om animal oth th mi d net I d ce acc ptanc of the homografts



5 The be t e lt a btai d with t ue f om the strai of mi in which the tumo rmally gr ws f m cl ly lat d t t

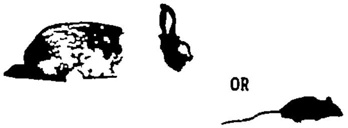


6 Th ffect cannot be produced for ery combination t t ansple tabl tumor and i b ed strain of mic

E

Antiserums Injected Prior to Tumor Grafting Lead to Acceptance of the Graft

1 Antiserum t ti ue f om strai A pred d i



2 Th antiserum i i jected int strai B mice

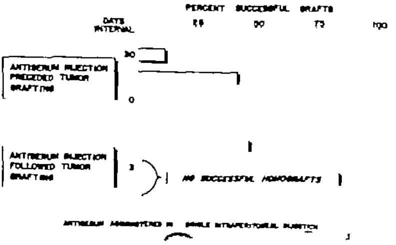
3 Sever l hours later a strai B mouse is inoculated subcutaneously

Results

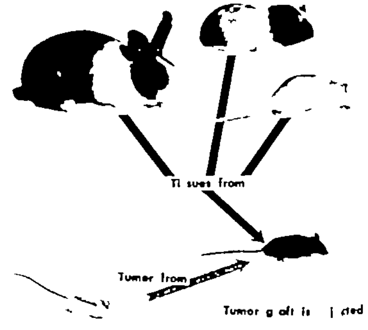
The tumor grows i the pretreated mice

The graft i ejected by th untreated mice

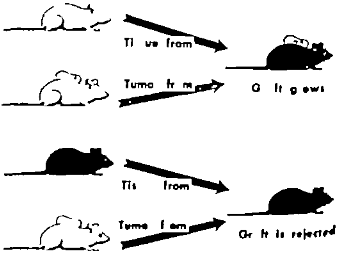
The effect f the antiserum i mo t pronounced whe it i i ject d shortly before tumor grafting



4 Ti from a imals th than mic do not i duce cceptan of th homografts



5 The best results ar btai ed with ti sues f om the t ai of mic i which the tumor orm lly g ws or from cl ely related t

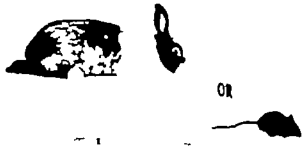


6 Th ffect cannot be p oduc d f ry combination f t a plantabl tumor and inbred str i of mi

E

Antiserums Injected Prior to Tumor Grafting Lead to Acceptance of the Graft

1 Antiserum t ti sue from st In A or p edu ed I



2 The antiserum I i j ct d I t tral B mic

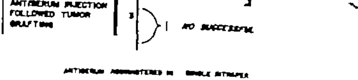
3 Several hours later a tu t nor is inoculated subcutaneously

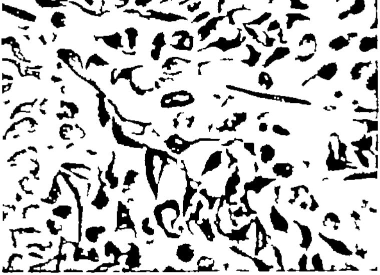
Results

The tumor grows in the pretreated mice

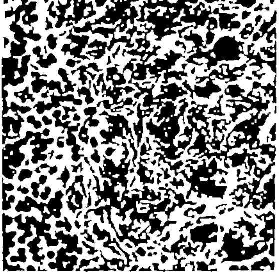
The graft is rejected by the untreated mice

Th effect f th antiserum I most pronounced whe it I inject d shortly bef re tumor grafting

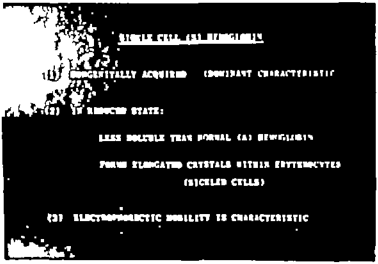


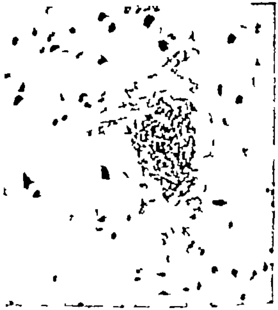


S[illegible] [illegible] in moist unstained preparation of bone marrow (mag. × 700, AFIP neg. [illegible])

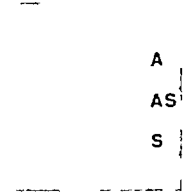


Sickled cells in congested and hemorrhagic focus of lymph node; macrophages contain erythrocytes (mag. × 918, AFIP neg. 801148)



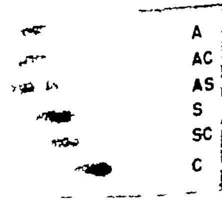


Sickled cells in dilated cerebral [illegible]; edema; perivascular hemorrhage (mag. × 370, AFIP neg. 52-2734)



Paper electrophoretic mobility patterns of A and S hemoglobins

Single crystals in cell-free solutions of reduced S hemoglobin, phase microscope (mag. × [illegible], AFIP neg. [illegible], courtesy of Dr. Karl Singer, Michael Reese Hospital, Chicago)



Paper electrophoretic mobility patterns of A, S, and C hemoglobins

INHERITANCE PATTERNS

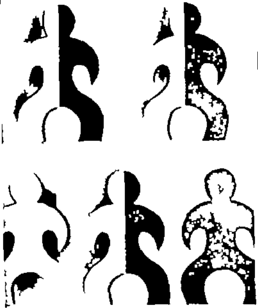
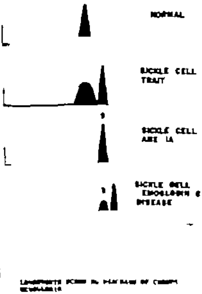
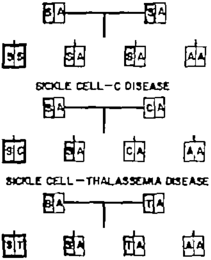


Diagram indicating inheritance of sickle cell anemia and sickle cell trait (sicklemia) from heterozygous S parents.



Lengthwise scanning diagrams of carboxyhemoglobin.



A Normal Hemoglobin Gene
S Sickle Hemoglobin Gene

Inheritance [illegible] indicating genetic variants of sickle cell disease.

SPLENIC LESIONS

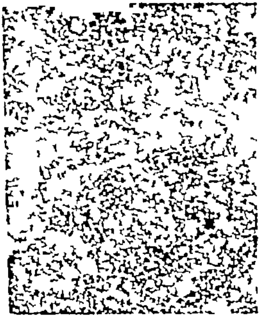
Characteristic perifollicular stasis, spleen. (mag 58, AFIP neg. 489117)

THE SPLEEN MOST STRIKINGLY EXEMPLIFIES THE VARIED LESIONS OF SICKLE CELL DISEASE.

ELONGATED, RIGID AND MULTI-POINTED SICKLED ERYTHROCYTES FORM AS A RESULT OF HYPOXIA AND CAUSE INCREASED VISCOSITY, RETARDED BLOOD FLOW AND STASIS.

THESE CHANGES CAUSE SPLENIC LESIONS RANGING FROM CONGESTIVE ENLARGEMENT TO SIDEROFIBROSIS AND ATROPHY.

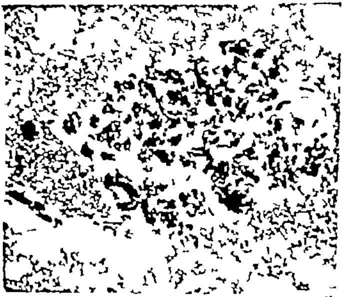
[illegible]



Diffuse congestion of spleen, perifollicular hemorrhage (mag. [illegible] 70, AFIP neg. 102326)

Mahogany color of enlarged congested spleen (AFIP neg. 219650)

Beginning atrophy, spleen [illegible] siderofibrotic nodule; sickled erythrocytes in pulp (mag. [illegible] 340, AFIP neg. 10253[illegible])



Advanced focal siderofibrotic nodule (Gamna-Gandy body; mag. [illegible] AFIP neg. 523095)

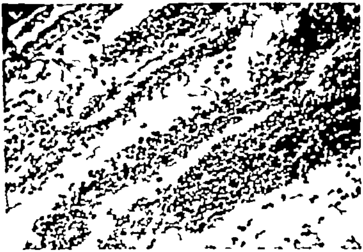
Infarct [illegible] limited to subcapsular zone, intermediate zone of [illegible] and [illegible] and central zone (mag. [illegible], AFIP neg. 523953)

Moderately advanced siderofibrosis, [illegible], and atrophy (mag. [illegible] 70, AFIP neg. 102578)

Advanced fibrosis and distortion of architecture atrophic spleen (weight 13 gm mag. 7 AFIP neg. [illegible])

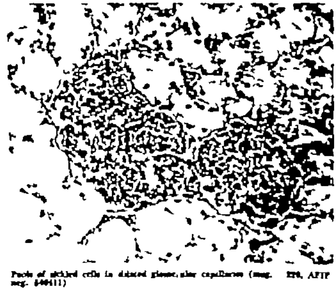
End stage: complete fibrosis and calcification, weight 8 gm mag. 6, AFIP neg. [illegible]

SICKLED CELLS - STASIS

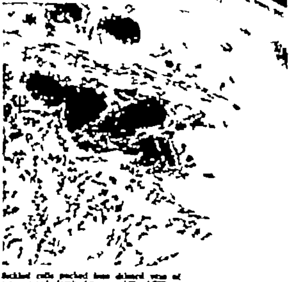


Engorgement by sickled cells of vessels in renal medulla (mag. 100, AFIP neg. [illegible])

Sickled erythrocytes packed into widely dilated sinusoids, with peculiar round cell cuffing (AFIP neg. [illegible])

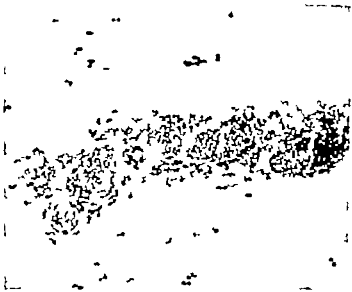


Packs of sickled cells in dilated glomerular capillaries (mag. [illegible], AFIP neg. [illegible])



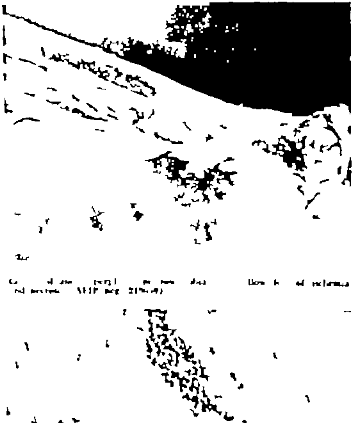
Sickled cells packed into dilated vein of unexpected death (mag. 185, AFIP neg.

Hepat[illegible] sinusoid[illegible] dilated and filled [illegible] sickled cells, [illegible] of sudden [illegible] death [illegible] (mag. [illegible] AFIP neg. 52 2743)

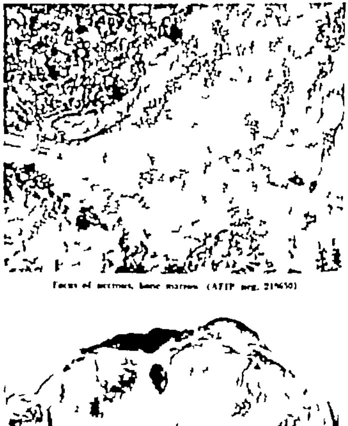


Small cerebral [illegible] packed [illegible] sickled cells, perivascular edema and hemorrhage (mag. [illegible] 125, AFIP neg. 52 2730)

ISCHEMIA - NECROSIS



[illegible] ischemia [illegible] necrosis [illegible] AFIP neg. 219[illegible]



Focus of necrosis, bone marrow. (AFIP neg. 219650)

[illegible] age and [illegible] necrosis, cerebral cortex (mag. [illegible] 125)

[illegible] femur age and necrosis [illegible] (removed surgically) [illegible] symptoms, hematuria (AFIP neg. 51 2529)

Asept. necrosis, head of femur; narrowing of vertebrae (AFIP neg. 219630)

Focal necrosis, central zone of liver lobule (mag. 85 AFIP neg. 48725)

SICKLE CELL DISEASES

HEREDITARY

ERYTHROCYTES CONTAIN S HEMOGLOBIN

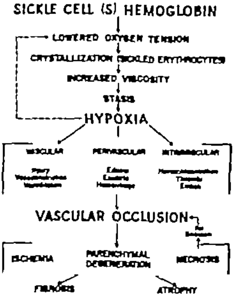
GENETIC VARIANTS INCLUDE

- Sickle Cell Trait——(A-S)
- Sickle Cell Anemia——(S-S)
- Sickle Cell Hbg C Disease-(S-C)
- Sickle Cell-Thalassemia Disease-(S-T)

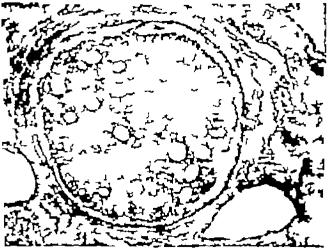
CHARACTERIZED BY VARYING DEGREES OF

- Stasis
- Vascular occlusion
- Tissue degenerative lesions
- Fibrous replacement of parenchyma

SEVERITY OF SYMPTOMS, SIGNS AND LESIONS IS PROPORTIONAL TO AMOUNT OF ABNORMAL S HEMOGLOBIN



INFARCTION



Recent thrombus, lung (mag. 80, AFIP neg. 95325)

Early thrombus in widely dilated vessel, brain (mag. 6, AFIP 219664)

Endothelial proliferation and thrombus, lung (mag. 100, AFIP neg 326 [illegible])

Organizing thrombus, capsule of lymph node; hemosiderin in phagocytes (mag. 120, AFIP neg 326133)

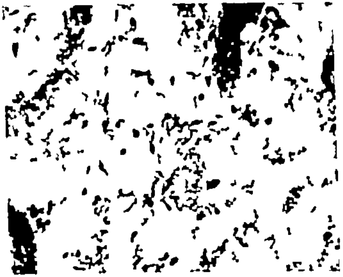
Recanalization of old thrombi, lung (mag. 70, AFIP neg 65594)

Portion of anemic infarct, kidney; such lesions may occur in absence of demonstrable thrombi (mag. 200, AFIP neg. 219650)

FIBROSIS - ATROPHY

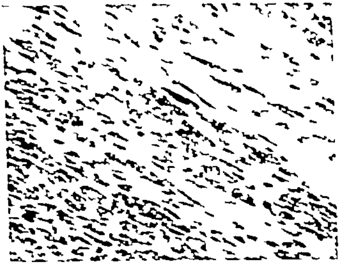
[illegible] showing [illegible] proliferation of dense fibrous tissue in [illegible] (AFIP neg L-541 2)

Fibrosis, deposition of calcium salts, and masses of pigment-laden macrophages obscuring normal architecture, lymph node (AFIP neg [illegible])



Focal atrophy, cerebral cortex; phagocytosis of pigment and debris by macrophages (mag. 125, AFIP neg. 219650)

Perivascular interstitial fibrosis following [illegible], lung (mag. 19, AFIP neg. 537765)

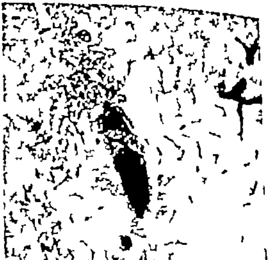


Myocardial fibrosis cor pulmonale; weight of heart, 300 gm. (mag. 112, AFIP neg. 537765)

Fibrosis and intense pigment deposition, lymph node [illegible] (mag. 48, AFIP neg. 534650)

VISCERAL LESIONS

CENTRAL NERVOUS SYSTEM



Diffuse capillary stasis, perivascular hemorrhages, and edema, cerebrum (mag. 44, AFIP neg. [illegible])

Thrombosed and recanalized pulmonary artery; generalized [illegible]; patient [illegible] h cor pulmonale; weight of heart, 500 gm. (mag. [illegible] 70, AFIP neg. 337765)

Lymph node at hilum of spleen; macrophages laden with hemosiderin; reticulum fibers encrusted [illegible] th dense deposits of mineral salts (mag. approximately [illegible] 900, AFIP neg. 219634)

BONE LESIONS

Osteoporosis of upper third of humerus with mottling from areas of increased density; appearance suggests foci of infarction, necrosis and fibrosis; periosteal and cortical irregularity (AFIP neg. AN 1770)

Section through foot and [illegible] h focal areas of stasis and marrow hyperplasia [illegible] fibrous area of [illegible] calcification and necrosis in lower third of tibia (AFIP neg. 219630)

Osteoporosis of bones at shoulder joint [illegible] h coarsening of bone [illegible] irregular [illegible] of articular surface (AFIP neg. 69925 15B)

Left, focal abscess with initial marginal reaction. Right, same area three years later (AFIP neg. 209639)

Left, area of osteoporosis beneath leg ulcer of one month's duration. Right, same area of distal tibia six years later (AFIP neg. 209639)

NEGRO MALE, AGE 20 --- SICKLE CELL ANEMIA

LEG ULCER, AGE 13

AMPUTATION DUE TO COMPLICATING INFECTION,

AND NECROSIS, TIBIA

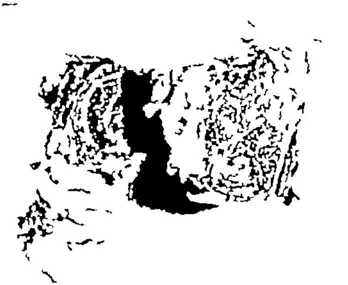
Top, focal abscess, distal tibia: osteoporosis and fibrous [illegible] sclerosing osteitis as above. Center extensive osteoporosis, femur (only major weight bearing trabeculae remain), [illegible] foci of [illegible] bone and fibrosis. Bottom, focal abscess, proximal tibia, without expected degree of marginal bone sclerosis

Diffuse hyperplasia [illegible] cerebral marrow, [illegible] thickening of all of [illegible] (mag [illegible] 185, AFIP neg 526135)

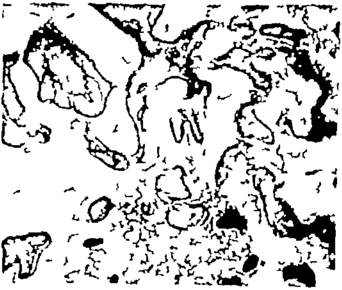
Scattered areas of marrow congestion and hyperplasia, long bones (formalin fixed); multiple foci of infarction and necrosis [illegible] variations in cortical thickness (AFIP neg 219650)

[illegible] (AFIP neg 219650)

Scattered [illegible] of osteoporosis and osteosclerosis [illegible] and fibula periosteal thickening [illegible] associated [illegible] (AFIP neg [illegible])



Section through lower third of femur; amputation for incapacitating leg ulcer; focus of aseptic necrosis in plane of amputation [illegible] unsuspected finding (AFIP neg. 54-14731)



Loss of active marrow cells in old infarcted area, fibrosis; dense bony trabeculae (mag. [illegible] 90, AFIP neg. 219630)

Hyperplastic vertebral bone marrow (mag. [illegible] 48, AFIP neg. 314912)

Illustrations of the Liver in Health and Disease.

Frank H. Netter and Hans Popper, Hektoen Institute for Medical Research of Cook County Hospital, Chicago.

Colored drawings illustrate the structure and function of the liver under normal and abnormal circumstances, with particular emphasis upon clinical aspects. These feature the gross and microscopic distribution of vessels and bile ducts with variations and abnormalities, the gross and microscopic changes of the liver in various diseases, and the clinical and functional significance of such features like jaundice. Furthermore, the physiological basis and clinical implication of hepatic tests and their correlation with structural changes are depicted.

Myocarditis: A Frequent Complication in Systemic Disease.

William C. Manion, Armed Forces Institute of Pathology Washington, D. C.

The exhibit will include representative photomicrographs of the myocardial changes found in a number of diseases such as (a) postinfectious myocarditis—postbacterial, postrickettsial, and postviral; (b) fungous diseases involving the myocardium; (c) parasitic diseases involving the myocardium; (d) collagen diseases involving the myocardium, and (e) metabolic and physical diseases involving the myocardium. A brief discussion of the pathology of each group is discussed in a pamphlet in the reading table of each group.

The Care of Laboratory Animals.

N. R. Brewer, American Veterinary Medical Association, Chicago.

The exhibit stresses the importance of budgeting for individuals with specialized training as managers of animal quarters. It emphasizes the interest that the veterinary profession has in this type of endeavor and its readiness to cooperate in the solution of problems that are presented. Pictures present important recommended procedures. Leaflets list important diseases of some common laboratory animals. A few animals will be on exhibit, with recommended cage equipment.

Simple Rapid and Accurate Method for the Determination Total Hemoglobin and Oxyhemoglobin.

Theodore E. Weichselbaum, Washington University School of Medicine, St. Louis.

The present clinically feasible methods for the quantitative measurement of total hemoglobin and oxyhemoglobin in blood leave much to be desired. To meet this difficulty a new method has been devised. This method does not involve any volumetric measurements (e. g. pipetting) or dilution of the blood sample, and the procedure is believed to be so simple that just as accurate results can be obtained by an untrained person as by a highly skilled technician. The method is a photometric procedure adaptable to any presently commercially available instrument.

The Problem of Subclinical Rheumatic Carditis.

C. George Tedeschi, Bernard M. Wagner, and K. C. Pani, Division of Pathology and Cardiovascular Research Institute, Hahnemann Medical College and Hospital, Philadelphia.

Four hundred auricular appendages removed at surgery in patients with rheumatic valvular disease have been evaluated according to morphological and histochemical methods. Postoperative deaths have allowed for correlation of ventricular pathology with the appendages. Several fatal cases of acute rheumatic fever have also been studied by these methods. Clinical correlation is available including measurements of cardiac size by x-ray. A considerable mass of interesting data have been accumulated that appear to shed new light on the fundamental pathogenesis of rheumatic disease. New concepts concerning the natural history of this malady can now be formulated based on these accumulated and varied observations. This information is of value for the intelligent management of rheumatic fever patients.

Thermal Neutron Capture Therapy of Glioblastoma.

John T. Godwin and E. E. Stickley, Brookhaven National Laboratory, Upton, L. I., N. Y.

The exhibit demonstrates the procedure, physics, physiology, clinical findings, and pathology of the investigative application of thermal neutron capture therapy employing boron-10 in human glioblastoma multiforme.

The History of Goiter in Peru, Chile, and the Argentine Republic.

Isidor Greenwald, New York University College of Medicine, New York.

Goiter was not endemic before the coming of Europeans and not for many years thereafter. At first, it was severely localized, and its spread came much later. In Peru and in Chile, it seems to be still extending its range. In some places in the Argentine Republic, diminution was noticed as early as 1805. This change was quite general by 1895. By 1914, the decrease had become so marked that it was not considered necessary to repeat the separate enumeration in the census of that year. Diminution in the incidence of deaf-mutism was recorded in the census of 1895, as compared with that of 1869, and a further decrease in that of 1914. There has been no census or other standard of comparison since 1914, but the impression in 1953 in Mendoza was that deaf-mutism had continued to decrease.

Aspiration Biopsy in Head and Neck Surgery

William G. Bernhard, W. Franklin Keim, Harold Grubin, Helmut Wagner, and Gerhard Sewekow, Hospital of St. Barnabas and for Women and Children, Newark, N. J.

The exhibit illustrates the correlation between aspiration biopsy and surgical material removed at a later date. In addition the technique of aspiration biopsy as applied to head and neck surgery and lymph node diagnosis is shown. The material for this exhibit is taken from a series of over 120 cases with adequate clinical and pathological follow-up. Correlation between the aspiration biopsy and the surgical specimen is emphasized.

Distinctive Tumors of the World.

Hugh R. Gilmore Jr., Armed Forces Institute of Pathology, Washington, D. C., Lucia Dunham and Harold L. Stewart, National Cancer Institute, Bethesda, Md., Jacques May, The American Geographical Society, New York, and Paul E. Steiner, University of Chicago, the School of Medicine, Chicago.

This exhibit portrays tumors that are related to occupation, race, ethnic groups, social levels, habits and customs, and geographical areas. Examples are mule spinner's carcinoma of the scrotum, Schneeberg carcinoma of the lung, betel nut carcinoma of the mouth, kang carcinoma of the buttocks, bilharzial carcinoma of the bladder, etc.

Primary Liver Carcinoma and Embryology

Hans Elias, Chicago Medical School, Chicago.

The exhibit consists of photomicrographs and three-dimensional drawings (reconstructions). Hepatocarcinoma develops structures that resemble adult and embryonic livers of lower vertebrates: two-cell thick plates, tubules, cords, muralia. Spindle cell tumors of hepatocellular origin are interpreted as true sarcomas, since recent findings indicate that a part of the liver is of mesothelial origin. On the same basis, tumors resembling adrenal cortex and ovary are explained. Ductal tumors can develop from liver cells, but not vice versa. This is explained on the ground that in the embryo ducts arise from liver cells. Numerous normal liver cells are directly transformed into cancer cells simultaneously at various places of one liver. This process of direct transformation is a continuous one and occurs in normal liver cells that are exposed to mechanical pressure in the presence of some other carcinogenetic stimulus.

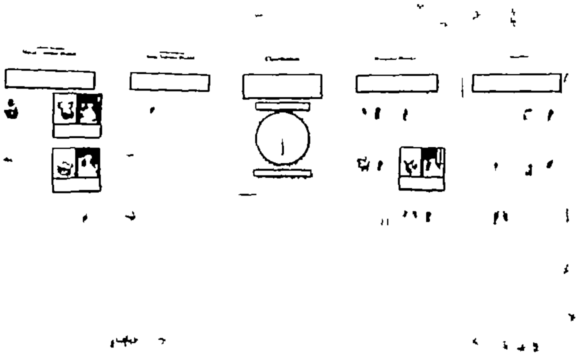
Role of the Clotting Mechanism in Hemorrhagic Diseases.

Robert L. Rosenthal, Beth Israel Hospital, New York.

This exhibit summarizes data based on more than 1,500 patients studied in the past seven years on hemorrhagic diseases from the standpoint of clinical aspects, diagnosis, treatment, and prevention. The complexities of the clotting mechanism are simplified in a new scheme. A critical evaluation of tests and measurements used clinically in blood coagulation and for identification of specific clotting factors are presented. Particular attention is devoted to the following entities: (1) hereditary deficiencies in protein clotting factors, including hemophilia and related diseases, such as AHG, PTC, PTA, labile factor, and stable factor deficiencies; (2) circulating anticoagulants, (3) platelet abnormalities—thrombocytopenia, thrombasthenia, and thrombocythemia, and (4) mechanisms of hemorrhage in leukemia, polycythemia, and total body irradiation.

Uncommon Heart Diseases

Robert O Brandenburg, M D Thomas J Dry, M B
Section of Medicine
Jesse E Edwards M D
Section of Pathologic Anatomy
Arthur H Bulbulian, M S
Museum of Hygiene and Medicine
Mayo Clinic and Mayo Foundation



The causes of heart disease are numerous and varied but approximately 97 per cent are of hypertensive coronary or rheumatic origin Congenital anomalies of the heart constitute about 1 per cent of cardiac disease There remains a very small group of patients in whom heart disease develops as a result of conditions that are widely diverse and sometimes obscure in origin The valves the myocardium or the pericardium may be involved The principal manifestations of these rare cardiac disturbances may be difficult to distinguish from those of the common cardiac diseases

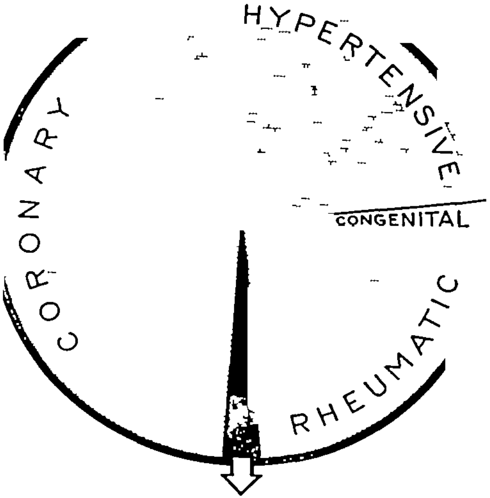
For the sake of convenience these rare types of heart disease may be classified as follows: (1) those simulating valvular heart disease of rheumatic or syphilitic origin; (2) acute forms of myocardial involvement simulating rheumatic fever or chronic forms resembling coronary heart disease; (3) pericardiac involvement simulating either acute pericarditis as in rheumatic fever, or chronic constrictive pericarditis

Classification

The causes of heart disease are numerous About 97 per cent are of hypertensive coronary or rheumatic origin Congenital anomalies constitute about 1 per cent of cardiac disease There remains a very small group of patients in whom heart disease develops as a result of conditions widely diverse and sometimes obscure in origin The principal manifestations of these uncommon cardiac disturbances may be difficult to distinguish from those of the common heart diseases These unusual cardiac conditions may be classified as follows:

1 Conditions simulating MITRAL VALVULAR DISEASE of rheumatic origin
2 Conditions simulating AORTIC VALVULAR DISEASES of the usual types
3 Conditions causing MYOCARDIAL DISORDERS of acute or chronic types
4 Conditions causing PERICARDITIS of acute or chronic types

ALL HEART DISEASES



Uncommon Heart Diseases

Conditions Simulating

Mitral Valvular Disease

Of Rheumatic Origin

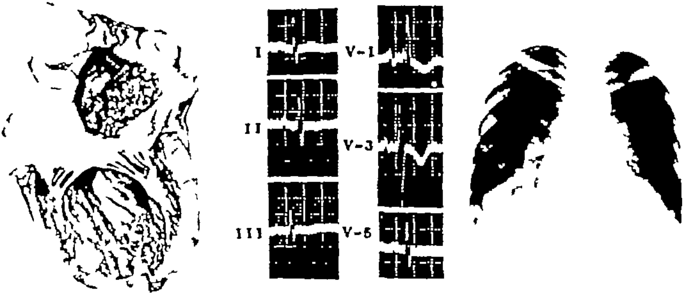
Pulmonary hypertension of the type seen in rheumatic mitral stenosis may also be caused by other conditions which create an impediment to pulmonary venous flow

Any obstructive lesion of the mitral valve or pulmonary veins, mitral insufficiency, endocardial sclerosis of the left ventricle, constrictive pericarditis and left ventricular failure of any cause fall in this category

These possibilities should be considered whenever pulmonary hypertension and pulmonary edema cannot be explained by an obvious cause such as mitral stenosis The conditions listed below fall in this category:

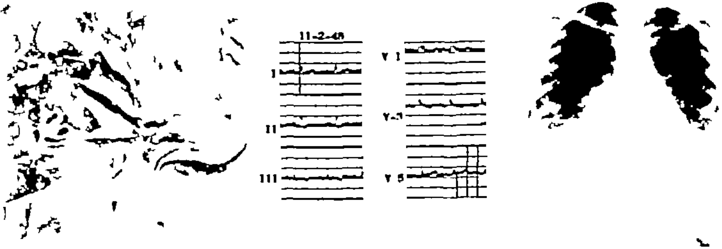
1 "Myxoma" of left atrium
2 Congenital cleft of mitral valve
3 Healed bacterial endocarditis of mitral valve
4 Ruptured chordae of mitral valve
5 Congenital stenosis of pulmonary veins (cor triatriatum)
6 Acquired stenosis of pulmonary veins
7 Endocardial sclerosis
8 Constrictive pericarditis
9 Left ventricular failure of any cause

Conditions 1-6 are shown below



"Myxoma" of the Left Atrium

Woman 50 years old Paroxysms of dyspnea for 5 months with orthopnea and epigastric pain Constant systolic and inconstant apical diastolic murmurs ECG discloses right ventricular hypertrophy The tumor periodically obstructed the mitral valv Fatal cerebral embolism from "myxoma



Acquired Stenosis of Pulmonary Veins

Woman 26 years old *Progressive dyspnea* Tb previously suspected Faint apical systolic murmur P_2 loud Congestion only at right lung base Pulmonary hypertension (90/45); no shunt Obstruction of all pulmonary veins except vein of right lower lobe by chronic mediastinitis Mitral valve was normal

Conditions Simulating

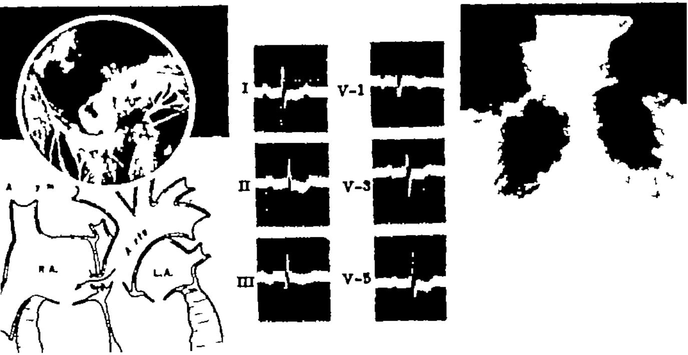
Aortic Valvular Diseases

Of the Usual Types

The usual types of aortic insufficiency are of rheumatic or syphilitic origin Those of stenosis are in part, at least, of rheumatic origin Among conditions that may simulate the usual varieties of aortic valvular disease are certain congenital malformations Aortic insufficiency may result from destructive lesions of the aortic valve, as in bacterial or traumatic processes, and from dilatation of the ascending aorta, as in Marfan's syndrome or in "incomplete dissecting aneurysm" of the aorta The conditions listed below fall in this category:

1. Ruptured aneurysm of aortic sinus
2. Ventricular septal defect and aortic insufficiency
3. Subaortic stenosis
4. Healed bacterial endocarditis of aortic valve
5. Bacterial endocarditis complicating syphilitic aortitis
6. Aortic insufficiency associated with Marfan's syndrome
7. Traumatic rupture of aortic valve
8. Traumatic "incomplete rupture" of ascending aorta
9. Aortic insufficiency associated with dissecting aneurysm
10. Carcinoid with metastasis and pulmonary stenosis

Conditions 1-5 and 10 are shown below

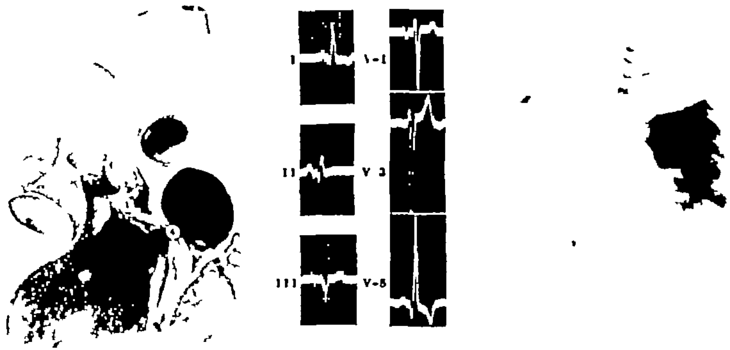


Ruptured Aneurysm of Aortic Sinus

Woman 42 years old Clinically well through multiple pregnancies Sudden onset of dyspnea Systolic and diastolic basal murmurs Ruptured aneurysm of aortic sinus confirmed by cardiac catheterization Communication between aorta and right atrium simulated aortic valvular insufficiency

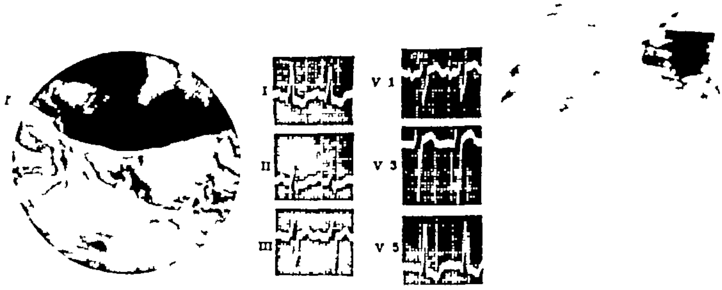
Ventricular Septal Defect and Aortic Insufficiency

Man 17 years old A "machinery precordial murmur suggestive of patent ductus arteriosus Wide pulse pressure Congestive heart failure developed Similarity to patent ductus explained by combination of ventricular septal defe congenital) and aortic insufficiency due to acquired fibrosis in valve leaflets



Subaortic Stenosis

Man 37 years old History suggesting rheumatic fever at 6 years Murmur noted at 12 years Increasing dyspnea and eventual congestive heart failure Aortic systolic and diastolic murmurs Heart enlarged Major obstruction in subaortic region producing signs simulating acquired aortic stenosis



Healed Bacterial Endocarditis of Aortic Valve

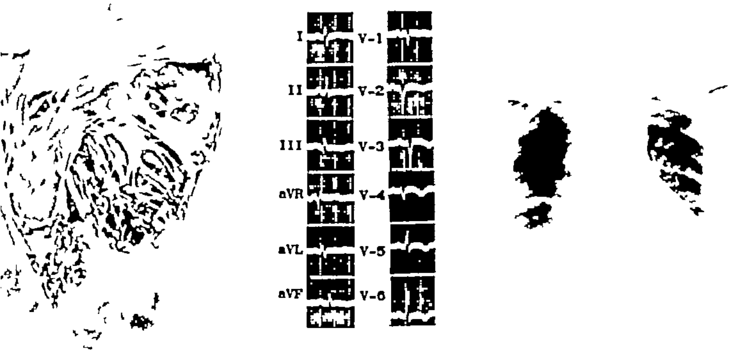
Man 30 years old Bacterial endocarditis treated Grade 1 aortic diastolic murmur Remained well 11 years Then increasing dyspnea and heart failure Evidence of free aortic insufficiency Terminally multiple pulmonary infarcts with suppurative pleuritis

Bacterial Endocarditis Complicating Syphilitic Aortitis

Man 53 years old   Known syphilitic aortitic insufficiency; 3 years later cardiac failure with fever; spleen and liver enlarged   Blood cultures: S mitis   Penicillin therapy begun but heart failure intractable   The aortic insufficiency was increased by the uncommon complication of bacterial endocarditis

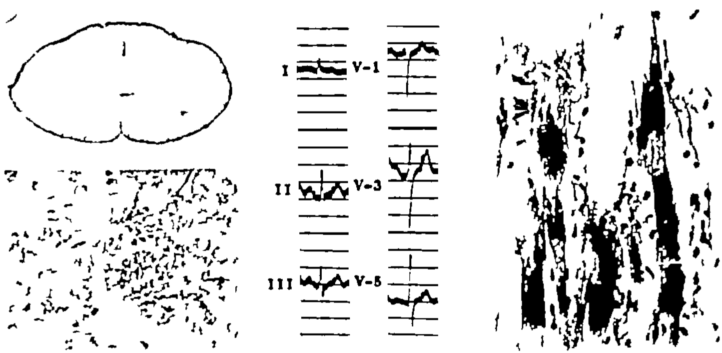
Carcinoid of Ileum With Metastasis and Pulmonary Stenosis

Woman 64 years old   Carcinoid of ileum with metastasis to liver and mesentery   Basal systolic murmur   No other cardiac signs   Death from mesenteric venous thrombosis   Basal murmurs suggested aortic valvular disease but necropsy fi of the tricuspid and pulmonic valves with pulmonic stenosis



Hemochromatosis With Cardiac Failure

Woman 62 years old Treatment with iron compounds for anemia for 20 years Insidious onset of weakness dyspnea ankle edema and ascites Skin brown slight icterus No glycosuria Fatal ruptured esophageal varices Heavy iron deposits in liver lymph nodes pancreas and myocardium No coronary or valvular disease Heart failure due to hemochromatosis



Acute Myocarditis of Poliomyelitis

Man 29 years old Acute poliomyelitis with bulbar involvement Pulmonary rales Soft apical murmur Blood pressure 140/120 ECG disclosed tachycardia and slight elevation of S-T segment in lead I Temporary improvement Later shock tachycardia and death Necropsy disclosed acute poliomyelitis and myocarditis like that seen in other viral infections

Paroxysmal Tachycardia With Cardiac Failure

Woman 49 years old One-year history of palpitation and fatigability Four months: constant tachycardia with increasing dyspnea and edema Later paroxysmal nocturnal dyspnea Blood pressure 130/100 ECG showed nodal tachycardia; rate 140 Normal rhythm established with quinidine and digitalis This was discontinued 3 months later No further symptoms

Conditions Causing

Pericarditis

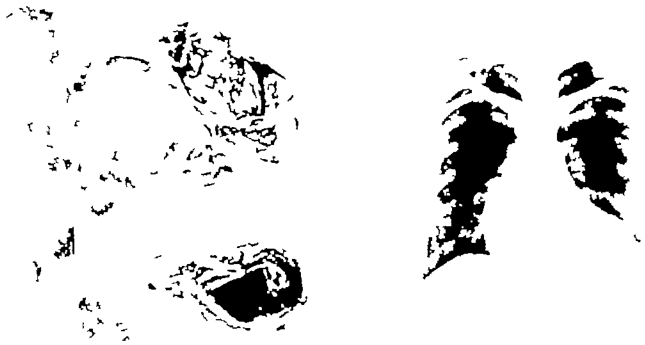
Of Acute or Chronic Types

Uncommon types of pericardial disease may simulate acute rheumatic pericarditis or chronic constrictive pericarditis Among acute types are benign nonspecific pericarditis, pyogenic infections and the pericarditis of lupus erythematosus Constrictive effects may be produced by neoplasms or by bloody effusions arising from fibrinous pericarditis of any cause, including myocardial infarction Endocardial sclerosis and diffuse myocardial disease, such as amyloid, may simulate chronic constrictive pericarditis The conditions listed below fall in this category

1 Pericardial effusion of unknown origin
2 Hemopericardium complicating fibrinous pericarditis
3 Primary pericardial neoplasms
4 Secondary pericardial neoplasms
5 Pericarditis of parasitic or mycotic origin
6 Pericarditis of pyogenic or tuberculous origin
7 Hemopericardium from trauma or hemorrhagic diathesis
8 Endocardial sclerosis
9 Amyloid infiltration of heart

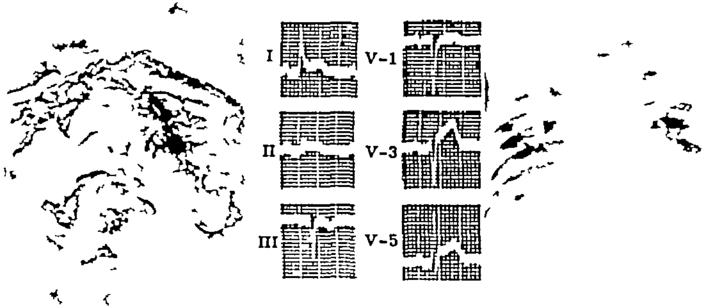
Conditions 1-6 are shown below

Conditions 8 and 9, while not a cause of pericarditis, may simulate it



Amebic Pericarditis

Man 47 years old Anterior thoracic pain fever and weight loss for 6 weeks Blood pressure 92/70 Muffled heart sounds Necropsy disclosed pericardium distended with 500 cc of brown purulent fluid originating from amebic abscess of liver which had penetrated the diaphragm and pericardium

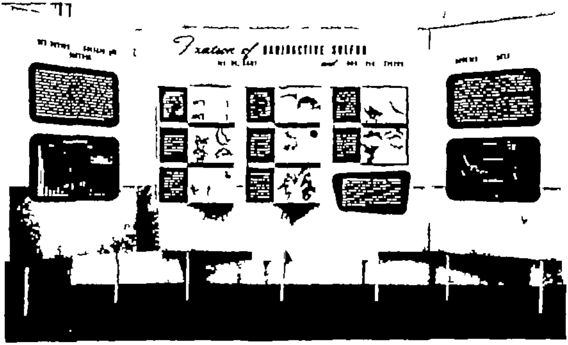


Ruptured Abscess of Myocardium

Man 71 years old Recent chest pain with fever Gallop rhythm Increasing cardiac silhouette distant heart sounds developed Pericardial tap: pus (gram pos cocci) Antibiotics Progressive decline Necropsy: myocardial abscess with rupture and purulent pericarditis

Fixation of RADIOACTIVE SULFUR
BY CARTILAGE, CARTILAGINOUS TUMORS *and* CONNECTIVE TISSUE

VETERANS ADMINISTRATION HOSPITALS Martinsburg W. Va. and Houston Texas
Raymond G. Gottschalk M.D.



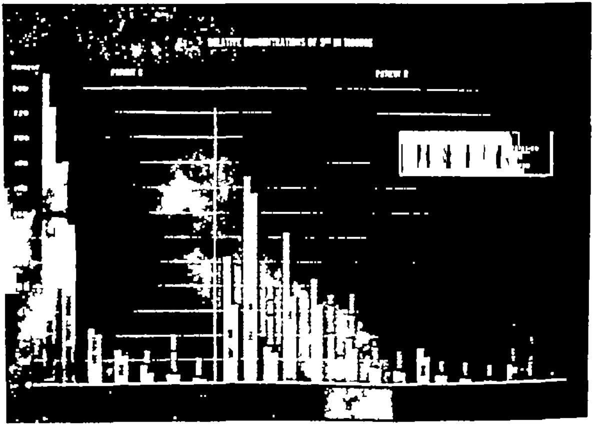
Fixation of Radioactive Sulfur by Cartilage, Cartilaginous Tumors and Connective Tissue.

RAYMOND G GOTTSCHALK, Veterans Administration Center
Martinsburg, W Va.

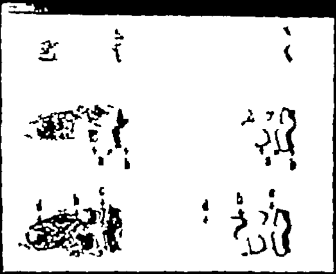
The exhibit demonstrates that radioactive sulfur when injected in patients as sodium sulf te, is selectively fixed by cartilage and by benign and malignant tumors of cartilage (chondromas and chondrosarcomas) The degree of fixation is related to the rate of growth. Radioactive sulfur is also fixed, to a lesser degree, in the ground substance of regenerating connective tissue. These affinities open vistas of new diagnostic, and possibly therapeutic, applications in tumors of cartilage, inasmuch as the radioactive isotope is selectively retained for extensive periods of time in these tissues and rapidly eliminated from the blood.

DISTRIBUTION OF SULFATE S^{35} IN TISSUES

The ground substances of cartilage and of connective tissue contain chondroitin - sulfuric acid. [illegible] radioactive [illegible] injected as sulfate [illegible] sulfated polysaccharides. Four [illegible] retained for lo[illegible] other tissues. [illegible] comparison of [illegible] results on different patients; representative results are given.



1 [illegible] graph (left) and [illegible] graph [illegible] of knee of four week old [illegible] injected with $Na_2S^{35}O_4$. Twenty four hours after injection S^{35} is concentrated in [illegible] and epiphyseal (b) cartilage and [illegible] degree in the fibrocartilage of the meniscus [illegible] and in bone (d).



2 Knee joint of young adult mouse, 63 days after injection of S^{35}. Radioactivity persists for extensive periods in the cartilage (a) and no activity is present in the bone marrow (b).

3 [illegible] of patient B with multiple ecchondromas and associated chondrosarcoma. Twenty-six hours after injection S^{35} localizes in the perichondrium (a) and close [illegible] the well preserved cartilage cells [illegible] of this chondroma, but not [illegible] degenerating [illegible]

4. In the chondrosarcoma of patient B large amounts of PAS [illegible] muscle (e).

5. Patient [illegible] had a poorly differentiated chondrosarcoma [illegible] pulmonary [illegible] (b).

6. Chondrosarcoma of patient [illegible] connective tissue stroma (c).

[illegible] Small amounts of S^{35} are fixed in dense connective tissue. In the aorta (patient [illegible]) [illegible], S^{35} is taken up [illegible] the intima (a) and in the [illegible] (b) and outer (c) portions of the media. Fibrous structures have slightly higher uptake than parenchymatous organs.

[illegible] In a repairing wound [illegible] patient C, [illegible] hours after [illegible] [illegible] the newly formed connective tissue (granulation tissue) (a) takes up small amounts of S^{35}. Very little is fixed in the adipose tissue (b).

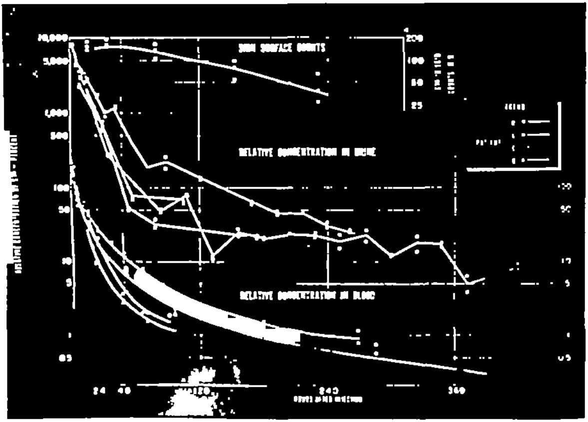
Panel 1 illustrates the technique of radioautographs. Deparaffinized [illegible]

[illegible]

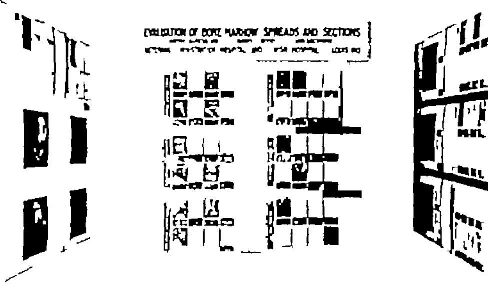
of sections. The contrast has also been exaggerated in reproducing the weaker radioautographs.

EXCRETION OF SULFATE S^{35}

The kidneys rapidly excrete sulfate - S^{35}; 55 to 78% of the dose is found in the urine in the first 24 hours. [illegible] concentration [illegible] urine [illegible] volume. Patient [illegible] was [illegible] urinary [illegible]. After the initial [illegible] urine [illegible] concentrations of S^{35} [illegible]. Tissue concentrations can be [illegible] direct counting only [illegible] the [illegible] of S^{35}. The skin surface counts [illegible] concentrations in urine [illegible].



APPLICATIONS - The selective localization of sulfate - S^{35} in the growing portions of [illegible] there for [illegible] with metastases. [illegible] cells. [illegible] Tracer doses of S^{35} [illegible] during surgery. S^{35} also permits studies on the rate of growth of connective tissue and of the tumor.



Clinical Evaluation of Bone Marrow Spreads and Bone Marrow Sections.

HARRY AGRESS, ANN LOCKHART and HARRY N OFFIELD, Veterans Administration and Jewish Hospitals, St. Louis.

A comparative study of bone marrow sections and spreads in 1,187 patients is presented. Interesting aspects of technique are shown in colored transparencies, as are many clinical conditions. The comparative value of spreads of bone marrow and sections of the same material is stressed. Selected colored transparencies are displayed, emphasizing the value of such comparative studies.

BONE MARROW

GENERAL COMPARISON OF SPREADS AND SECTIONS

	SPREADS	SECTIONS
CELLULARITY	VARIES WITH TECHNIQUE	CONSISTENT WITH TRUE STATE OF MARROW
RELATIVE DISTRIBUTION OF CELL SPECIES	IRREGULARITIES DEPENDENT ON TECHNIQUE	ACCURATE REFLECTION
IDENTIFICATION OF INDIVIDUAL CELLS	BETTER THAN IN SECTIONS	MORE DIFFICULT THAN IN SPREADS
MITOTIC ACTIVITY	MORPHOLOGY OF INDIVIDUAL MITOTIC FIGURES BETTER THAN IN SECTIONS	QUANTITATIVE ASPECT MORE READILY APPARENT THAN IN SPREADS
HISTOLOGIC STRUCTURE	ONLY IMPLIED	READILY DISCERNED
CYTOCHEMICAL STUDIES	—	MATERIAL SATISFACTORY
LYMPHOMATA	EASILY MISSED OR NOT APPARENT	READILY IDENTIFIED
GRANULOMA LESIONS	NOT SEEN	READILY IDENTIFIED
MALIGNANCY	INDIVIDUAL CELLS OR GROUPS OF CELLS IRREGULARLY DISTRIBUTED	SYNCYTIAL MASSES READILY FOUND; HISTOLOGIC ARRANGEMENT MAY INDICATE SOURCE

Section of [illegible] containing syncytial mass of tumor cells displaying acinar formation of metastatic carcinoma of the thyroid. (Mag. x 400)

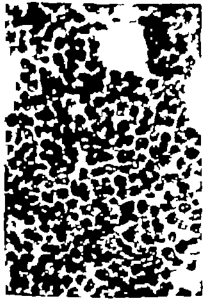
Spread of bone marrow (same specimen as at left) showing syncytial mass of tumor cells. Search for these cells was quite lengthy. No histologic arrangement suggesting the source of these cells can be discerned. (Mag. 800.)

Section of marrow showing solid nodules of tumor cells. These were quite apparent within practically every low powered field. (Mag. [illegible] 500)

Section of bone marrow clot as in the previous figure. Note that the carcinoma cells are found outside the marrow unit. (Mag. 200.)

Section of marrow clot showing central replacement of marrow unit by solid nodule of lymphocytes in case of lymphosarcoma. Note that clot portion is only moderately cellular (see bottom center figure on third page of this exhibit) Marrow spread on his specimen revealed only slight increase in lymphocytes. (Mag. 100)

Section of ... showing ... unit by ... portion is ...



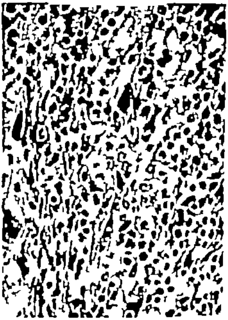
Section of marrow in case shown in top right figure two months later when a leukemic transformation occurred. Now there is diffuse involvement of the marrow unit and the clot. (Mag 400.)

Section of marrow showing tubercle in unsuspected case of miliary tuberculosis. (Mag. 400.)

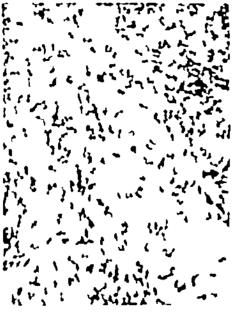
Section of ... loma lesion of ... unsuspected clinically ...

Section of ma ow obt ned by su gic l trephine sc d hopa hic myell fibr Despi nume us megakary tes, pa ient ha l ma ked h oml openia Mag 900)

Sect on of m rrow obt ined by surgical trephine showing marked fibrosis th metastatic carc noma of the breast Not l lo l essel filled w th tumor ell (Mag 900)



Section of marrow showing cloudy sw lling nd mild fibrosis l case of pol cythemia. These effect re the result of both l ternal nd external radiation (Mag 900)



Sec on d m m ol ned by su gic l rephine The external fil rou noted here is t bu ble l ale sm al esmal m d ement by tuberculosi (M g 100)

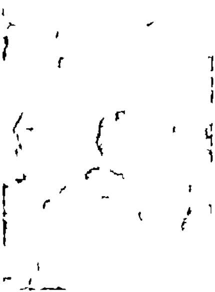
BONE MARROW

CO RELATION OF PREPARATIONS

	SPREADS	SECTIONS
SATISF CTORY PREPARATIONS	92%	95
ANEMIA, ETIOLOGY ARIABLE	0%	0
PLASTIC ANEMIA	0	20%
CARCI O A	90	100%
GRA ULO A LESIONS	0	100
HISTIOCYTES	100	0
HODGKIN'S DISEASE	3	8 7%
EUKEMI	100	100
EU OSARC MA	60	9
PI IS COM	9 4	10
M L M E O	72	97
MYE	0%	3
P P C I	1	

DIAGNOSTIC

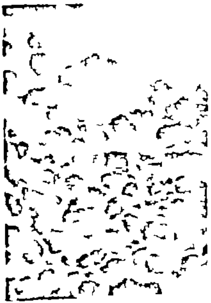
Section of marrow obtained by routine needle aspiration showing thickened capillary in a patient ith Wilson Kimmelstiel disease (Mag 400)



Spread of bone ... g Gaucher ell f ... pro longed sc h M

Section of same specimen as in figure t lef hich shows numerous Gaucher cells in each field. (Mag 900)

Spread of bone marrow ith luster of myeloma cells. (Mag. x 800)



Section of same material as figure at left Myeloma Its re qu t numer ous and are located ithin the ma row unit F t is prominent (Mag 400)

... marro ... h lupus erythe ma osus (L E) ... These cells are found only in the lot and not in the marrow ... p eparations such as ours (Mag 800)

Section of marrow with hemosiderosis. This preparation as st ned for iron which shows p l this reproduction the ery dark taining reas (Mag x 700.)

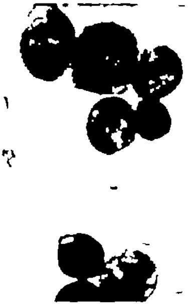
Section of marrow revealing neven distribution of marrow elements Not the fai ly sizeable island of nucleated erythrocytes. (Mag 200.)

Spread of bone marrow from case of pernicious anemia. A megalocyte with ery abnormal mitotic figure (not the wandering pair of chromosomes) is seen. (Mag. x 800.)

Spread of bone marrow from case of pernic ous nemia The megalocyt l the lower portion of the field dis play larger bodis in pa hologic mitotic f g re (M g x 800)

Spread of bone marrow show ng mito tic nd m totic cell div sion (Mag 800.)

Spread of bone marrow in case of u treated pernicious anemia The three cells in the pper portion of the field re nucleated ery hrocytes Th karyolysi of the nuclei typical of the pathologi erythropoiesis in this di sease (M g 800)



Spread of bone marrow in case of acute stem cell (undifferentiated) leukemia. These cells show the fine chromatin pattern of very youthful cells as well as the "monstrosity" formation so characteristic of leukemia. Here the marked abnormality of the nuclear pattern presents the "cream puff" nucleus. (Mag. 900.)

Spread of bone marrow showing syncytial mass of tumor cells. The "signet ring" form suggests secretory organ as the site of origin. (Mag. 1000.)

Blood Banks.

Oscar B. Hunter Jr., American Association of Blood Banks, Washington, D. C.

This exhibit shows the doctor, technologist, nurse, and researcher as well as administrative personnel of hospitals and blood banks, how a good bank can be set up, what it can accomplish, and how the American Association of Blood Banks can be of assistance in the setting up and improvement of the blood bank activities. The details of the National Blood Bank Clearing House are displayed, with the techniques, methods, and procedures for the exchange of blood between different banks throughout the country.

Clot Density Determination of Fibrinogen in Acute Myocardial Infarction.

SAMUEL LOSNER, BRUNO W. VOLK, and NATHAN D. WILENSKY † Jewish Chronic Disease Hospital, Brooklyn, N. Y.

The plasma fibrinogen concentration, [illegible] determined serially by the clot density method, closely reflects the severity of [illegible] myocardial infarction. In the early phase of the disease the fibrinogen concentration, as studied in [illegible] 0 consecutive cases, mirrored the severity of the clinical condition, while the sedimentation rate frequently [illegible] normal or low, particularly in the presence of hemoconcentration. During convalescence the sedimentation rate often remained elevated long after the fibrinogen concentration had returned to normal. Patients with maximum fibrinogen level exceeding 800 mg. per 100 cc. had [illegible] mortality rate of 42% whereas those with lesser concentration had only [illegible] mortality of 9.7%. The fibrinogen concentration may be utilized [illegible] criterion for the institution of anticoagulant therapy. When the administration of hypoprothrombinemic agents, dicumarol, etc., is controlled with the photoelectric determination of prothrombin time, the clot density determination of fibrinogen is obtained without additional laboratory procedures.

Treatment of Leukemia.

JOSEPH M. HILL, ALICE SMITH, DALCIO FALCO, and ROBERT J. SPEER, Dallas, Texas.

The exhibit shows charts, photomicrographs, radiohistographs, and experimental data on treatment of 54 [illegible] cases of chronic leukemia with radioactive [illegible] phosphate P 32 (colloidal). Charts also show cases of acute leukemia and an analysis of 109 cases treated during the last 5 years. Emphasis is placed on massive hormone therapy, especially 9 alpha-fluoro-hydro-cortisone and prednisone.

Bacterial Carcinogens.

GEORGE A. CLARK, Scranton, Pa., and H. H. LEFFLER, Washington, D. C.

This exhibit shows successful cultivation from human malignant lesions as well [illegible] successful reproduction of metastatic tumors in guinea pigs and rats. (Sponsored by Cancer Research Foundation, Pittsburgh.)

Pressure Effects of Supratentorial Glial Neoplasms.

BELA HALPERT, WILLIAM S. FIELDS, and CHARLES A. CARTON, Veterans Administration Hospital, Houston, Texas.

The exhibit contains information concerning the effects of increased intracranial tension due to supratentorial glial neoplasms upon the brain substance. It graphically illustrates herniations from one compartment of the cranial cavity into another and its effects on cerebral spinal fluid circulation, blood supply, and nerves.

Current Yellow Fever Wave in Middle America.

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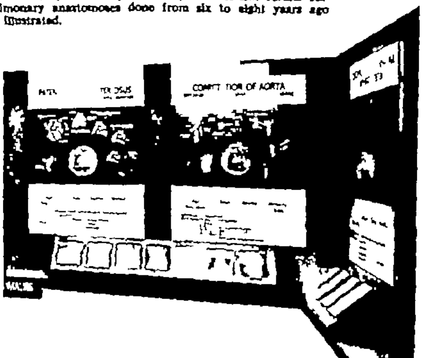

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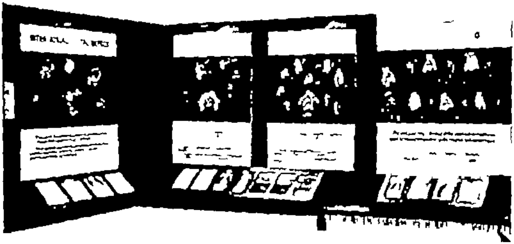

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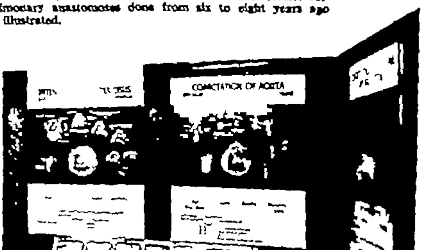

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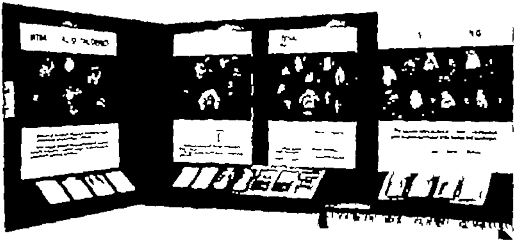

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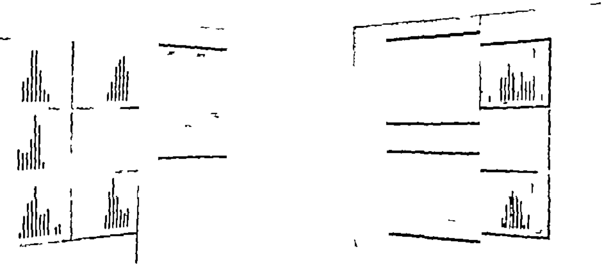
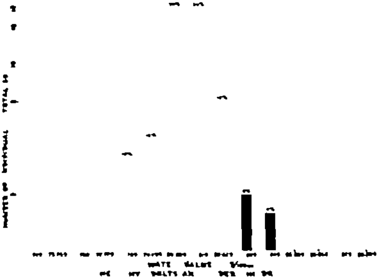
HONORABLE MENTION

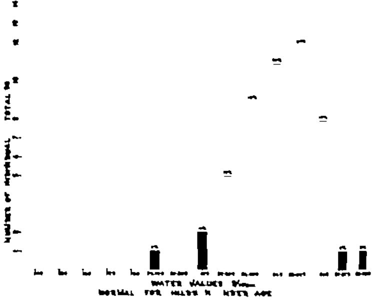


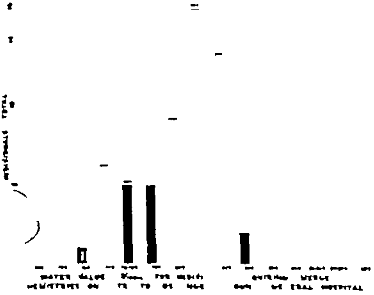
Bed Side Determination of Blood Water

KEITH E. KENYON, University of Southern California School of Medicine, and CURT W GREINER, Greiner Glassblowing Laboratory Los Angeles.

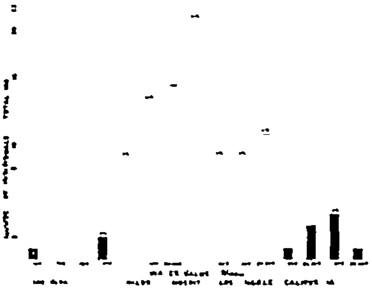
The exhibit shows the procedure involved in determining the water content of capillary amounts of blood at the bed side using Karl Fischer reagent and a specially designed pipette and portable burette apparatus. Tables and graphs show data so far obtained together with a working model of the equipment needed.

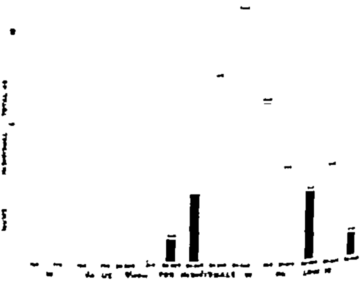






-AS CAN BE SEEN WATER VALUES IN WELL AND DISEASED INDIVIDUALS (ANEMICS EXCEPTED) ARE NOT FAR ENOUGH APART TO BE OF VALUE IN THEMSELVES IN DIFFERENTIATING THE INDIVIDUAL'S STATE OF HYDRATION ON THE INITIAL DETERMINATION





CHEMISTRY OF DIABETIC E.K. DURING THERAPY FOR COMA

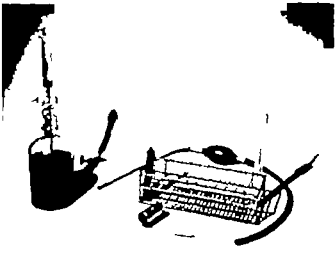
DATE	H_2O	Hb	H_2O + Hb	NPN	CO_2	SUGAR	REMARKS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6	[illegible]	PT SEMI COMATOSE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	
[illegible] A.M.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		PT ON ORAL FLUID STILL CLINICALLY DEHYDRATED
[illegible]	[illegible]	[illegible]	[illegible]				PT DOES NOT [illegible] CLINICALLY PT WAS NOT REHYDRATED ADEQUATELY
[illegible]	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	FOR THE FIRST TIME PT EATING WELL, LOOKS WELL, AND FEELS WELL.
[illegible]	[illegible]	[illegible]	[illegible]				PT TO BE DISCHARGED TO BE FOLLOWED IN OPD
[illegible]	[illegible]		[illegible]				VALUE OBTAINED [illegible] BUT PATIENT [illegible]

WATER AND Hb VALUES OF A 5 MONTH INFANT WITH DIARRHEA DURING THERAPY

TIME	WATER	Hb	H_2O + Hb
INITIAL	[illegible]	[illegible]	[illegible]
2 HRS	[illegible]	[illegible]	[illegible]
PT BEGAN RECEIVING BLOOD IN ADDITION TO FLUIDS			
[illegible] HRS	[illegible]	[illegible]	[illegible]
6 HRS	[illegible]	[illegible]	[illegible]
24 HRS	[illegible]	[illegible]	[illegible]
[illegible] HRS	[illegible]	[illegible]	[illegible]

IV FLUID THERAPY DISCONTINUED

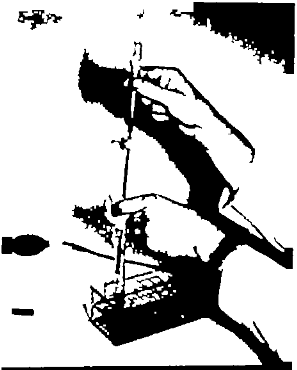
THE INITIAL WATER VALUE FOR ANY SEVERELY DEHYDRATED INDIVIDUAL MAY BE IN THE NORMAL RANGE BUT WILL BE FAR BELOW NORMAL FOR THAT INDIVIDUAL. AS THE PATIENT IS REHYDRATED THE WATER WILL RISE



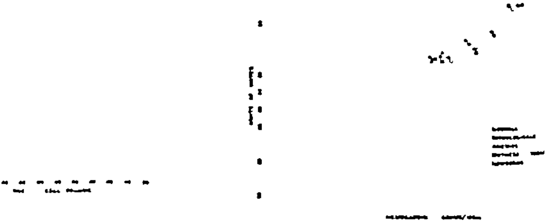
THE EQUIPMENT NEEDED INCLUDING THE PORTABLE BURET ASSEMBLY THE PIPETTE, AND THE PIPETTE TUBING WITH BULB

BLOOD IS TAKEN FROM THE FINGER IN THE USUAL MANNER

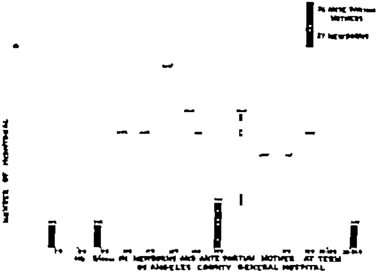
THE END POINT IS READ WITH THE SYRINGE DEVICE IN PLACE AND PUSHED AS FAR BACK AS POSSIBLE



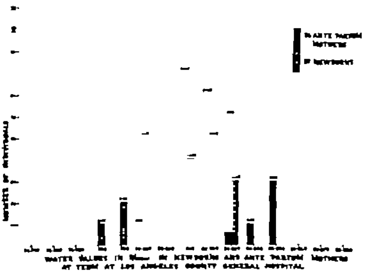
THE SYRINGE DEVICE MUST BE THOROUGHLY DRIED AGAIN BEFORE RE-INSERTING INTO THE RESEVOIR

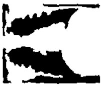


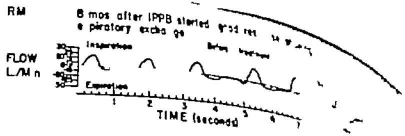
ALTHOUGH THERE IS LITTLE CORRELATION BETWEEN PCV AND WATER THE Hb AND WATER VALUES SHOW SIGNIFICANT CORRELATION

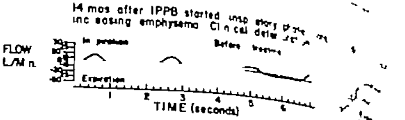


- AS A GENERAL RULE FOR ANY GIVEN Hb, THE LOWER THE WATER, THE MORE DEHYDRATED THE BLOOD






RM
8 mos after IPPB started
FLOW
L/Min
Inspiration
Expiration
TIME (seconds)


14 mos after IPPB started
emphysema
FLOW
L/Min
Expiration
TIME (seconds)

CLINIC

CLIMATE

INF NTS & CHILDREN RECEIVING INTERMITTENT POSITI E PRESSURE AEROSOL THERAPY

SEPTEMBER 195 MAY 1955

AGE ROUP	NUMBER TREATED	RANGE OF TREATMENTS	PROVED TH [illegible] APY	NUMBER RECEIV-ING OTHER R	NUMBER RECEIV-ING AEROSOL R
[illegible]	5		985		
			6		
	[illegible]		90		
			80	4	4
			37	4	6
		[illegible]	0		
			0		

OTHER ME URE

CYSTIC FIBROSIS OF THE PANCREAS

FACTOR INFLUENCING NEONATAL RESPIRATION

INFANTILE SPASTIC HEMIPLEGIA

M. A. PERLSTEIN M.D. LESLIE B. HOHMAN M.D. MARGARET H. JONES M.D.
Chairman
HERMAN JOSEPHY M.D. H. W. MAGOUN, PH.D.
THE BRAIN REGISTRY OF THE AMERICAN ACADEMY OF CEREBRAL PALSY

Infantile spastic hemiplegia is a well defined clinical entity with diversified causes and pathologic findings

It is the most common form of cerebral palsy, one third of all cases

CLINICAL TYPES OF CEREBRAL PALSY

Type	Frequency	Usual cause
Spastic	65%	Trauma and vascular damage
Athetoid	25%	Anoxia or other blood-borne mechanisms
Rigidity		
Tremor	10%	
Ataxia		

Nearly one half of all spastics are hemiplegic.

Correlation of the clinical syndromes with their many causes and varied pathologic changes may reveal the pathogenesis clearly enough to suggest the prophyla

A Clinical History of a Nine-year old Boy

Mother primiparous pregnancy normal

Dystocia midforceps LOA

Weighed 9 lbs. at birth

Had left cephalohematoma

Clearly displayed at 6 mos.
failure to use right arm.

Walked at 20 mos.

Talked in words at 20 mos
in sentences at 30 mos

IQ is 80

EEG shows left temporoparietal spikes

Has right focal seizures
and frequent tantrums

Walks with equinus on right

Does not use right arm.

Both right extremities are
shorter than the left
especially the arm

Suffers loss of proprioception and
form discrimination
in right hand.

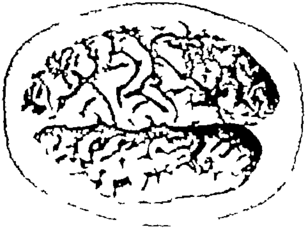
Has right homonymous hemianopsia

PRENATAL SPASTIC HEMIPLEGIA

is uncommon — less than 5%

It may be caused

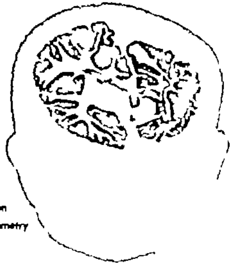
▶ by malformations



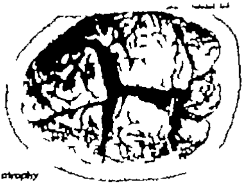
Left hemiatrophy with normal gyral patterns

▶ or by a prenatal 'stroke' due to maternal toxemia

Right spastic hemiplegia associated with maternal toxemia



Coronal section showing asymmetry



Left cortical atrophy with subdural hematoma

Pneumoencephalogram showing large left porencephaly calcified subdural hematoma and shifting of midline to left

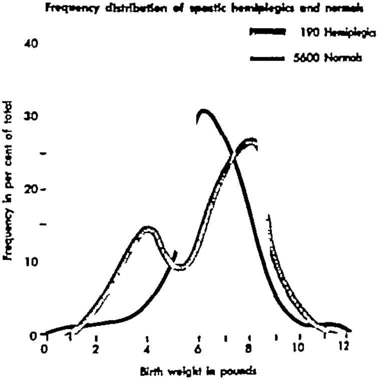
Right spastic hemiplegia with left hemianopsia and right focal seizures; born by normal delivery to toxemic mother

Most prenatal causes such as maternal infection or anoxia are blood-borne and generally cause symmetrical brain lesions

NATAL SPASTIC HEMIPLEGIA

is the most common type—65%

▷ Prematurity and heavy birth weight are predisposing factors



Note bimodal peak at 4 and 8 lbs. in hemiplegics.

▷ Bleeding diathesis or debility of the newborn may predispose to hemiplegia

Ne t to trauma and vascular damage anoxia is the most important cause of brain injury to the newborn. Ano ia however usually causes symmetrical lesions and tropyramidal syndromes.

▷ Forceps trauma may result in injury to the parietal area

Left parietal forceps injury

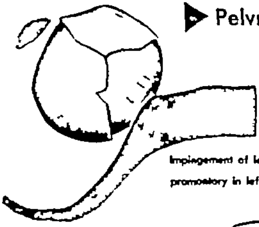
Spastic hemiplegia need not affect longevity

Th patient lived 68 years

Les than 5% of brain injury is due to forceps.

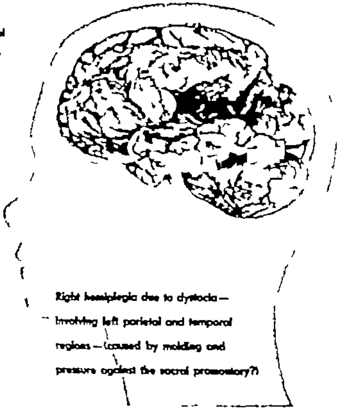
The physiologic hazards of birth may cause injury to the fetal head which acts as a battering ram Cerebral hemorrhage or contusion may result

▶ Pelvic disproportion, dystocia or pituitrin induction may aggravate the physiologic traumas



Impingement of left parietal bone on sacral promontory in left occiput anterior delivery

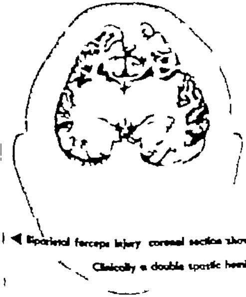
Molded head with overriding bones; parietal area marked by sacral promontory



Right hemiplegia due to dystocia—involving left parietal and temporal regions—(caused by molding and pressure against the sacral promontory?)

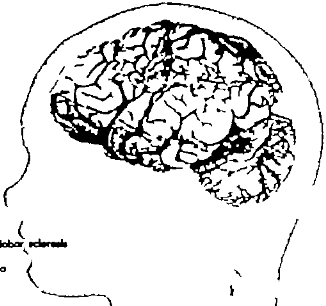
70% of all cephalic deliveries are LOA, so that the left side of the skull impinges on the bony pelvis.

Birth Weight and Laterality	8 lbs. and below	Right.Left—1 1
	above 8 lbs.	Right.Left—2:1
	above 9 lbs.	Right.Left—3 1



◀ Biparietal forceps injury coronal section showing lobar sclerosis

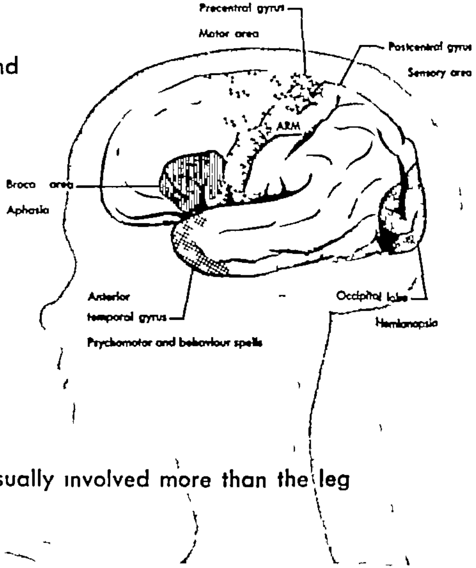
Clinically a double spastic hemiplegia



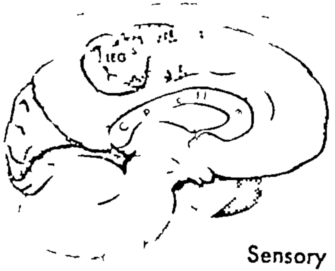
CORRELATION between clinical entity and pathologic findings

Mental retardation and

seizures are common



The arm is usually involved more than the leg



Sensory handicap may be more disabling than motor, because proprioception and form discrimination are lost

Failure of growth is of cerebral origin

due to involvement of postcentral gyrus

Right spastic hemiplegia
Note smaller bones and delayed bone age on [illegible]
(4 carpal centers, compared with 6 on left).

Right spastic hemiplegia showing smaller cranial vault on left

The growth defect on the contralateral side is not limited

to the extremities, but may involve portions of the brain

Aplasia of contralateral lobe of cerebellum

Aplasia of pyramidal tract due to destruction of contralateral cortical cells of

Boy one year of age —
Seborrheic dermatitis.

While the color of the rash is not typical, being a little redder than usual, this case illustrates the rather oily or greasy "sheen." It also illustrates the marginated lesions at the periphery of the flexures with clearing in the depths of the joint folds.

"Occasionally the skin may have a kind *of oily or greasy sheen which does not* occur in atopic dermatitis."

●

This exhib t is b sed on material taken from he book Allergy in Ch ldhood, by Jerome Glaser M D which is in press nd w ll be published somet me d ring 1955 by Cha les C Thoma of Springfield Ill

●

Poisoning Control Programs.

Edward Press, George M. Wheatley New York, and E. H. Christopherson, Evanston, Ill., American Academy of Pediatrics.

The exhibit describes the varying patterns of the organization of poisoning control programs in several different cities, together with sample results from some of them. It also includes the latest revision of the outline guide and manual on accidental poisoning published by the accident prevention committee of the American Academy of Pediatrics.

Nutritional Management of Infantile Allergies with a New Soybean Mixture.

Sydney H. Kane, Philadelphia.

The exhibit presents critical evaluation of new soybean mixture (formula) prepared by flash sterilization method. The nutritional merit of the soybean formula is demonstrated by growth progress on Wetzel Grids. An analysis of the common infantile allergic symptoms is given, together with the indications for use of the soybean formula. Kodachrome illustrations of typical patients are presented, and reasons for failure of the formula to give desired results are reviewed.

Angiocardiography in Normal and Abnormal Hearts.

B. M. Gasul, E. H. Fell, H. G. Buchelleres, C. J Marienfeld, Gershon Hait R. F Dillon, P G Szanto, and Maurice Lev the Hektoen Institute for Medical Research, Cook County Children's Hospital, Presbyterian Hospital, and University of Illinois College of Medicine Chicago.

This exhibit is based on seven year study of over 700 separate angiocardiograms selected from 12,000 separate angiocardiographic plates taken mostly on infants and children. Eighteen separate clinical entities are shown. The diagnosis of each separate entity that is being shown is based on correlative clinical, fluoroscopic, roentgenologic, electrocardiographic, angiocardiographic, and catheterization studies of the heart and great vessels. In most of these patients the diagnosis is still further confirmed either by surgery or autopsy The angiocardiographic appearance of the normal heart in various views, and the most important clinical entities of the cyanotic and acyanotic types of congenital malformations of the heart, are demonstrated.

Reticuloendotheliosees in Childhood.

Harold W Dargeon and Lois Murphy Memorial Center for Cancer and Allied Diseases, New York.

Proliferative reactions of the cells of the reticuloendothelial system occur in wide variety of pathological states—metabolic, infectious, and neoplastic. The clinical evidences are often typical and recognizable without difficulty Others may be unusual, and the diagnosis may present formidable problems. Since the prognosis and diagnosis vary differentiation is of major importance. Examples of lipid and nonlipid varieties—"idiopathic" and infectious—are illustrated, and the therapy if indicated, is described.

A Di-Syndrome of the Laryngeal Nerve.

Charles C. Chapple, Children's Hospital, Philadelphia.

In the confined space within the uterus one fetal part may be held against the uterine wall or against another part for long enough time that is altered in shape. Skeletal changes on this basis are familiar. Blood vessels to part or to the nerve supplying the part may also be affected. An important example is the compression of branch of the laryngeal nerve or its vessels between the movable thyroid cartilage and (1) the hyoid or (2) the cricoid. This may occur hen the head has been flexed while facing shoulder This one position, lateral cephalic flexion, can produce unilateral weakness or paralysis of vocal cord and/or swallowing muscle. The diagnosis can be established by determining the infant' position of comfort and by direct laryngoscopy Dyspnea and/or dysphagia are the clinical signs.

Systematic Approach to Fluid Balance.

W D. Shively Jr., M. J Sweeney and R. C. Little, Evansville, Ind.

This exhibit presents in simplified manner the underlying principles of clinical fluid balance. It provides "knowledge pegs" upon which to hang the multitude of details required for working knowledge. A descriptive system of diagnosis based on suggestions by Meyer is presented. The basic imbalances include deficits and excesses in volume, concentration, composition, and distribution of the extracellular fluid that reflect intracellular changes. Each deficit and excess is described as to its clinical causes, clinical findings, laboratory findings, and therapy principle. A simple analogy clarifies the use of the milliequivalent. The "teeter totter" method of explaining acid-base imbalances, as introduced by Dr. Shively is employed in this exhibit to explain acid base imbalances. Gains and losses of body fluids are presented pictorially Electrolyte composition of the several body fluids is charted and compared. The seven major functions of parenteral solutions and the electrolyte content of parenteral solutions as compared to plasma are presented.

Progress in the Treatment of Epilepsy (Total Management of the Epileptic).

Frederic T Zimmerman and Bessie B. Burgemeister, Neurological Institute, Columbia-Presbyterian Medical Center New York.

This exhibit presents the diagnostic tools and therapeutic techniques used in the modern treatment of epilepsy These include neurological and psychiatric examinations, electroencephalographic recordings, psychological test, standard and new anticonvulsant drugs, and drugs such as reserpine, chlorpromazine, etc. that alleviate trigger mechanisms precipitating convulsive seizures. Case history material is given showing improvement in patients with nonepileptic behavior disorders following anticonvulsant medication and offers data on the relationship between certain behavior syndromes and epilepsy or epileptic equivalents. Correlation of findings stresses the need to broaden the purely neurological approach to include psychological as well as psychiatric aspects of epilepsy thereby stressing the treatment of the individual as hole as the most productive and most natural method of therapy

Streptococcic Infection in Pediatric Practice.

Burtis B. Breese and F A. Disney University of Rochester School of Medicine and Dentistry Rochester N Y

The exhibit deals with the diagnosis and treatment of large number of children infected with beta hemolytic streptococci. Pertinent diagnostic points are given, and the accuracy of clinical impression is discussed. Various treatment schedules are discussed.

Removal of Swallowed Objects from the Stomach by the Use of Two Magnets.

J. W Devine and John W Devine Jr., Lynchburg, Va.

A small Alnico V magnet is swallowed on the end of Levine Tube. This magnet is guided to all parts of the interior of the stomach by using large twenty pound Alnico V magnet on the outside of the patient's body A metallic body and the small magnet are brought in contact and then the foreign body is removed by withdrawing the Levine Tube. This can be done as an office procedure without an anesthetic.

Rehabilitation of the Intractable Asthmatic Child.

Harold S. Tuft and Daniel M. Kraus, Denver and M. Murray Peshkin, New York.

A graphic representation of the work of the Jewish National Home for Asthmatic Children in the care of the child with intractable asthma, is presented. The theory of the production and development of intractable asthma is depicted. The criteria in the diagnosis of intractable asthma and the methods of rehabilitation used at the home are outlined, including discussion of allergy care; antiasthmatic medication, particularly the steroids type; the group living situation; and the implication of therapy in group living and the psychiatric care by the caseworker technique.

Congenital Aganglionic Megacolon (Hirschsprung's Disease).

John F Mokrohisky Temple University Hospital and School of Medicine, and George P Keefer, St. Christopher's Hospital for Children, Philadelphia.

The exhibit presents roentgenographic classification of congenital aganglionic megacolon (Hirschsprung's disease) locations and appearances of short and long aganglionic segments, and correlation of the roentgenographic and pathological findings. The study is based on series of 44 cases.

The Pediatrician Examines Mother and Child.

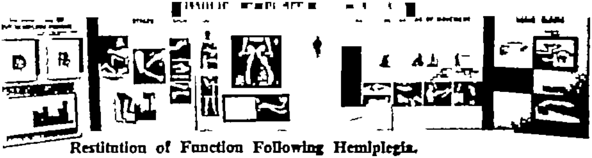
E. Robbins Kimball, Evanston Infant Welfare Society Evanston, Ill.

A chart to record physical growth was constructed from the measurements of Stuart from Harvard for the first five years of life and from those of Meredith from the University of Iowa for the age period from 5 to 18 years. Also, various developmental tests were plotted against age. When the child performed, the appropriate test was checked off along the ordinate, and an appropriate remark as to the kind of performance was written in opposite age. When he did not perform, an arrow was marked opposite age, accompanied by descriptive remark regarding the nature of the techniques of resistance encountered. The principal difference between the use of the chart presented here and that of Arnold Gesell is that the child is considered not as separate entity but the mother and child are considered together Tests have also been changed to gain speed.

The Breast Milk Bank As Community Project.

Alvah L. Newcomb, Evanston Hospital, Evanston, Ill.

A map of the world will indicate the type of breast milk facilities in each city i. e., the breast milk bank that existed in the past but is not now operating; the breast milk bank now operating; the number of ounces handled per day; cost to patient; payment to donor and sponsoring organization, etc. A detailed description of the Breast Milk Bank operated by the Junior League of Evanston and the Evanston Hospital Association will be available, together with display of the equipment used. All visiting physicians will be in detail concerning the breast milk banks in their respective so that new information will be added to the map all



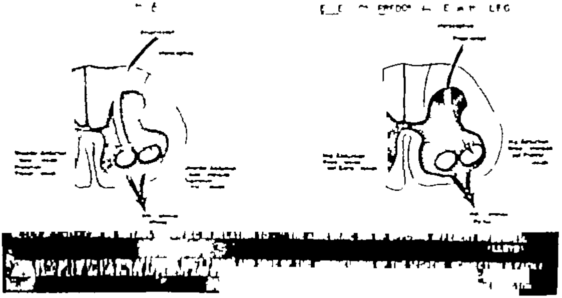
Restitution of Function Following Hemiplegia.

WALTER J TREANOR, RAOUL C. PSAKI, OLENA M COLE, JOHN J KEYS, and CARUS S HICKS, Letterman Army Hospital San Francisco

The exhibit brings out three main aspects of hemiplegic care 1 The pathological physiology of the hemiplegic posture. Diagrams show alterations in relaying of incoming impulses at the spinal synapse. 2. Patterns of motor return, both spontaneous and under treatment. These show three major impediments to recovery postural hyperactivity dyssynergies, and proximal paresis. 3 Factors that influenced recovery These include selective reeducation, curtailed ambulation, nerve conduction "blocks," and operative procedures.

PATHOGENESIS OF THE HEMIPLEGIC POSTURE

COMPETING SPINAL "HALF-CENTERS" ONE INNERVATING FLEXOR AND THE OTHER EXTENSOR MOTONEURONS

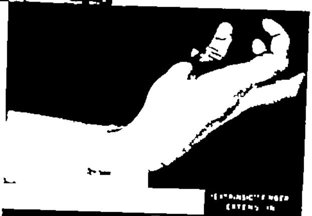


THE SAMPLE STUDIED

STAGES IN SPONTA

[illegible] ACTIVITY AT "[illegible]" JOINT

[illegible]



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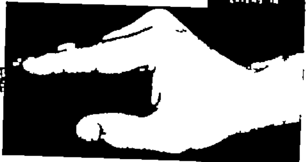

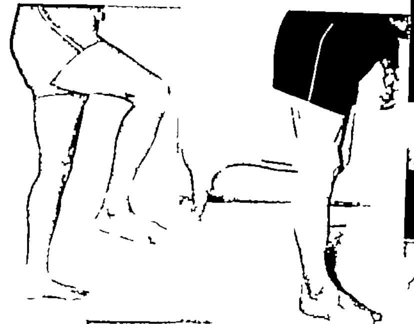

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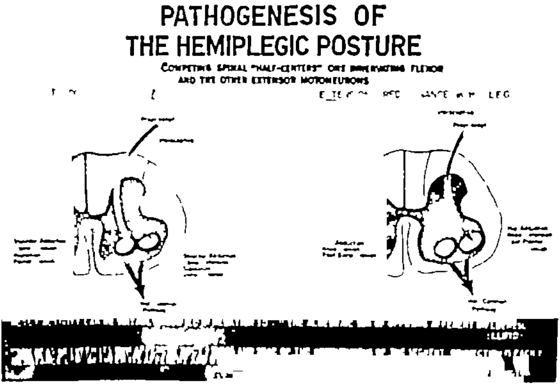
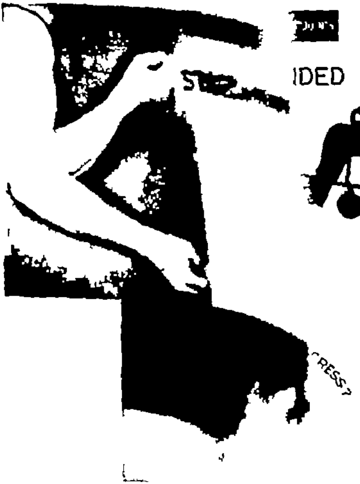
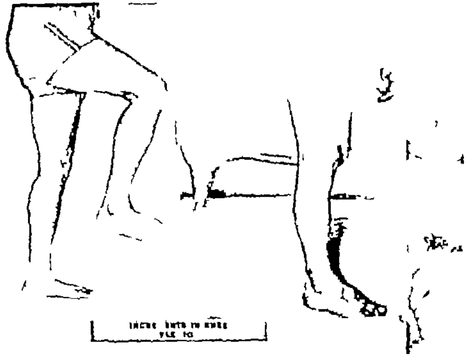


GROSS FLEXO [illegible]





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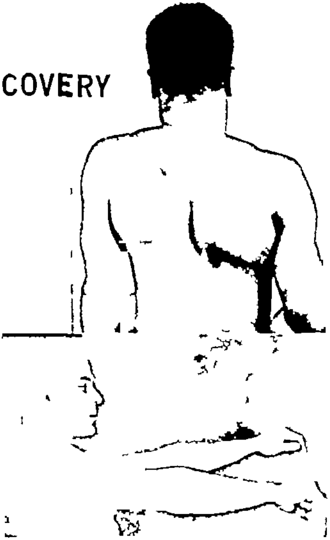
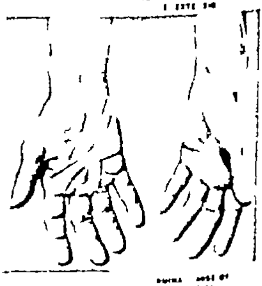
NEOUS RECOVERY

Delayed through all stages





PROTECT JOINT RANGE

AIMS

STANDING TABLE

PATIENT GROUNDED

STANCE

SITTING BALANCE
QUADRICEPS
PLANTAR-FLEXORS

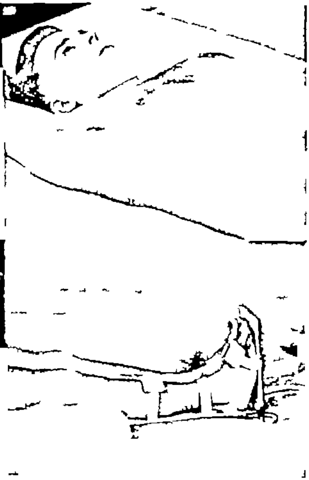
HAMSTRINGS
TRICEPS
DORSI-FLEXORS
WRIST
ANKLE

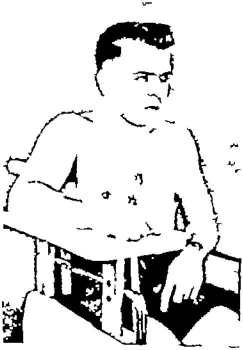
? 50 YEARS OF PROGRESS ?

1905 1955

SELECTIVE RE-EDUCATION

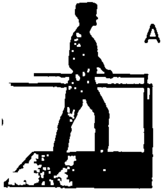
POSITIONING and SPLINTING





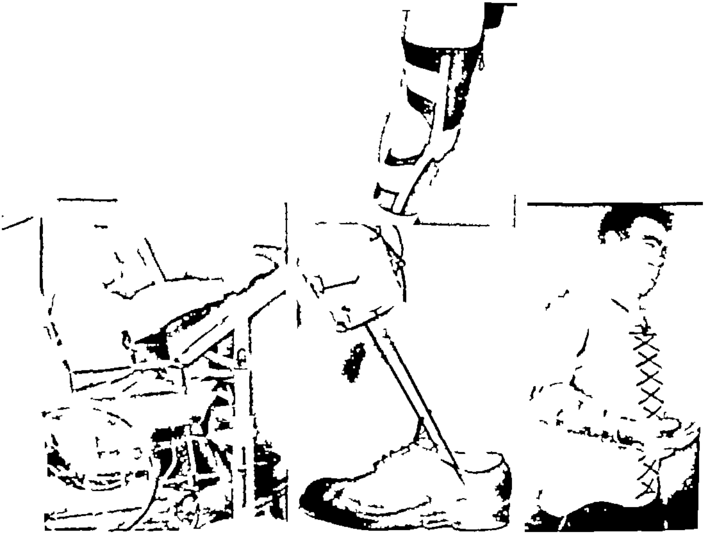
STAGES IN RETRAINING OF MOVEMENT

AMBULATION WITH DIMINISHING SUPPORT



"INTRINSIC" FINGER
EXTENSORS
THUMB ABDUCTORS
FOOT DORSI FLEXORS
AND EVERTORS

TRAPEZIUS
SERRATUS ANTERIOR
DELTOID
ABDUCTORS } HIP
FLEXORS }



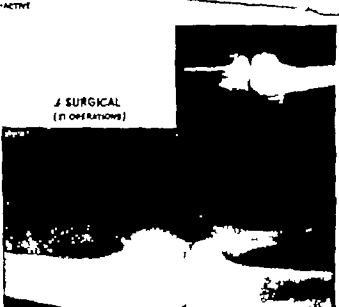
PRINCIPLES

RE EDUCATION SHOULD BE *SELECTIVE*
UTILIZE ALL MEANS OF ACTIVATING MUSCLES
RESISTANCE THROUGTH OPTIMAL RANGE
ALLOW FOR JOINT SENSIBILITY DEFICITS
DEXTERITY AND ACTIVITIES OF DAILY LIVING—*LATE*

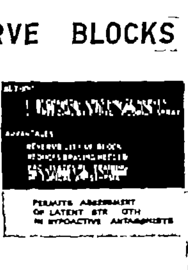
a. CHEMICAL

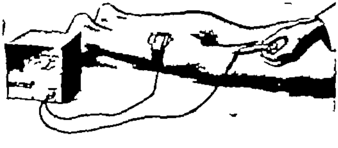
TEMPORARY CONDUCTION BLOCK BY 2% XYLOCAINE (LIDOCAINE HYDROCHLORIDE) OF NERVES SUPPLYING OVER-ACTIVE MUSCLES

b. SURGICAL
(21 OPERATIONS)



NERVE BLOCKS

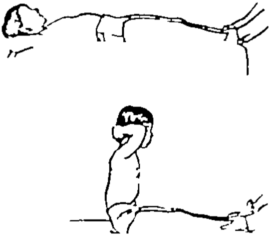




Hypokinetic Disease.

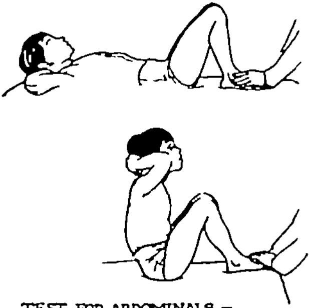
HANS KRAUS, KURT HIRSCHHORN, BONNIE PRUDEN HIRSCHLAND and SONJA WEBER, New York University Bellevue Medical Center New York.

Lack of physical activity (hypokinetic state) may lead to disease. The exhibit presents a list of diseases that are caused by underexercise or that have lack of exercise as contributing factor This includes cardiovascular disease tension syndromes of physical or emotional nature, and orthopedic conditions, among others. Muscular deficient low back is described. Prevention of hypokinetic disease and the role of physical medicine and rehabilitation in its prevention are described. A study of the state of muscular deficiency and fitness of American school children (eastern seaboard area) and comparative study in countries abroad are presented. The role of hypokinetic state as contributing cause to disease is discussed.

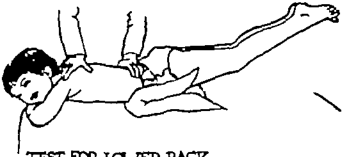


TEST FOR ABDOMINALS +

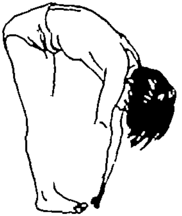
Kraus Weber Tests
For Muscular Fitness



TEST FOR ABDOMINALS −

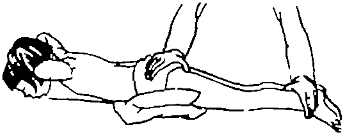


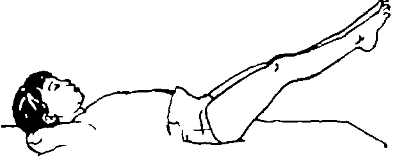
TEST FOR LOWER BACK



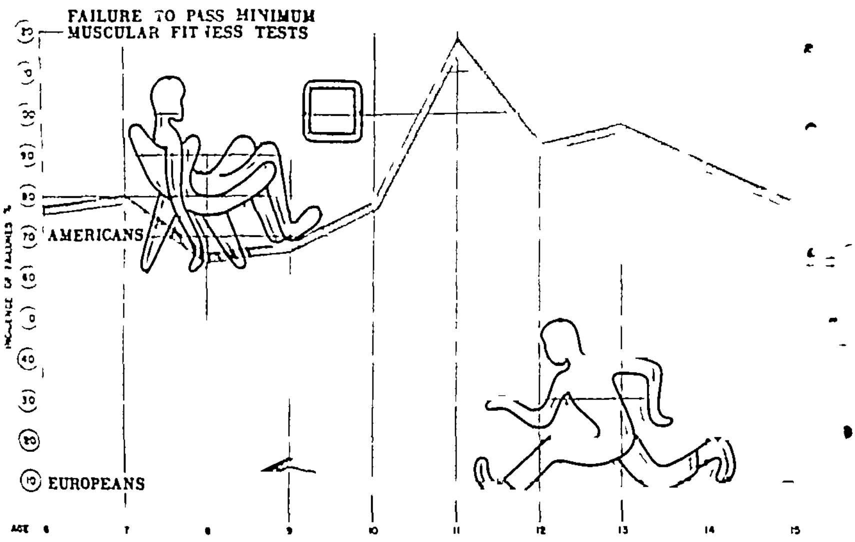
TEST FOR LENGTH OF BACK AND HAMSTRING

TEST FOR UPPER BACK

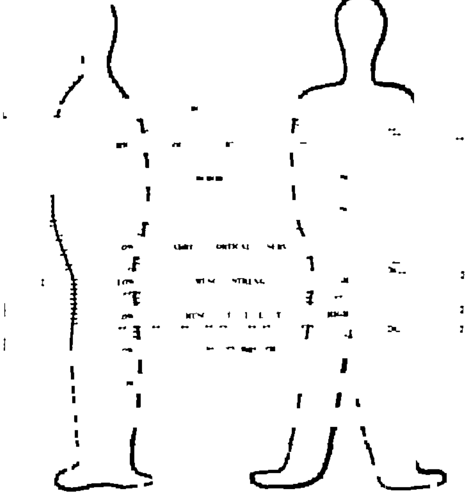




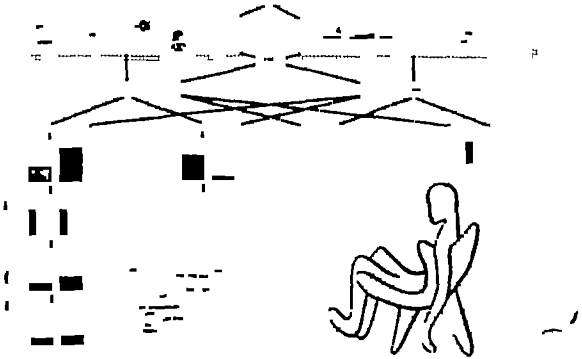
TEST FOR PSOAS - LOWER ABD



FAILURE TO PASS MINIMUM MUSCULAR FITNESS TESTS
AMERICANS
EUROPEANS
INCIDENCE OF FAILURES %
AGE 6 7 8 9 10 11 12 13 14 15

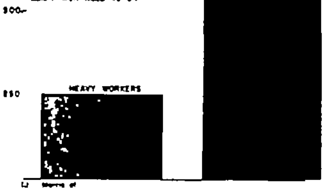


DISEASE



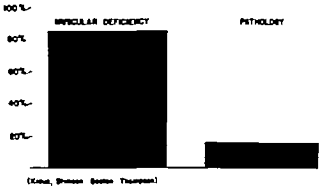
CORONARY HEART DISEASE

AVERAGE ANNUAL MORTALITY RATE PER MILLION MEN AGED 45-64



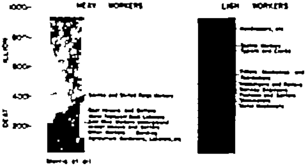
LOW BACK PAIN

OVER 80% OF LOW BACK PAIN IS DUE TO MUSCULAR DEFICIENCY

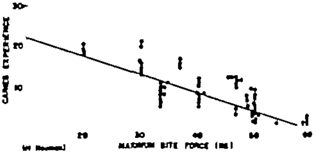


CORONARY HEART DISEASE

MORTALITY IN MEN AGED 45-64 IN ENGLAND AND WALES 1930-32



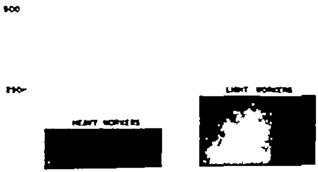
CARIES



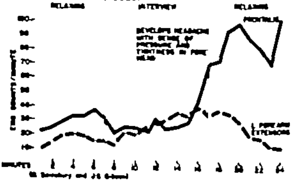
TENSION AND WEAKNESS CONTRIBUTING CAUSE FOR PERIODONTAL DISEASE (MOULTON) AND TEMPOROMANDIBULAR JOINT SYNDROME (SCHWARTZ)

DIABETES

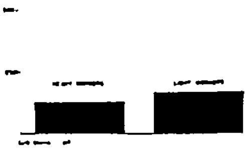
AVERAGE ANNUAL MORTALITY RATE MILLION MEN AGED 45-64



MUSCLE TENSION

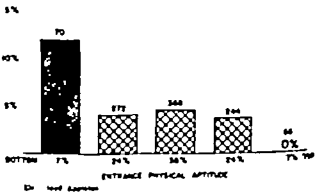


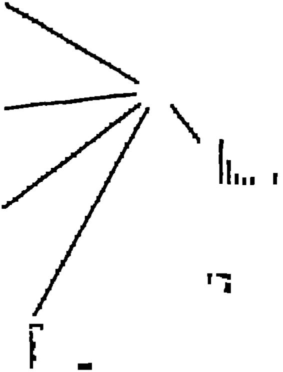
DUODENAL ULCER



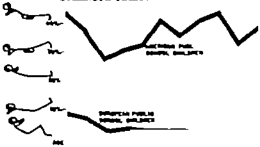
PSYCHIATRIC

WEST POINT CADETS DISCHARGED WITH PSYCHIATRIC DISORDERMENT

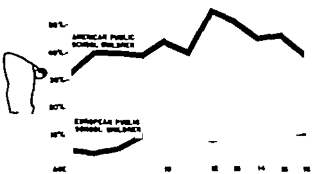




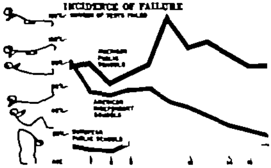
STRENGTH FAILURES



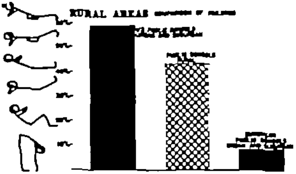
FLEXIBILITY FAILURES



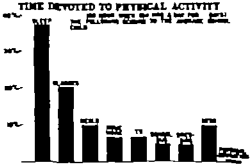
INCIDENCE OF FAILURE



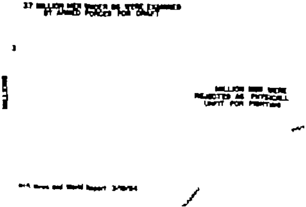
RURAL AREAS

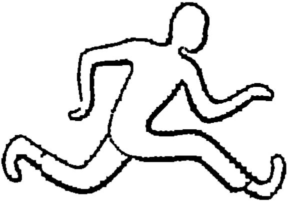


TIME DEVOTED TO PHYSICAL ACTIVITY

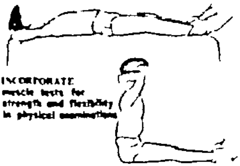


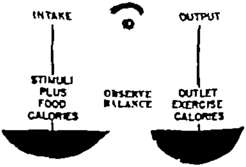
DRAFT REJECTIONS





TREATMENT BY THE DOCTOR





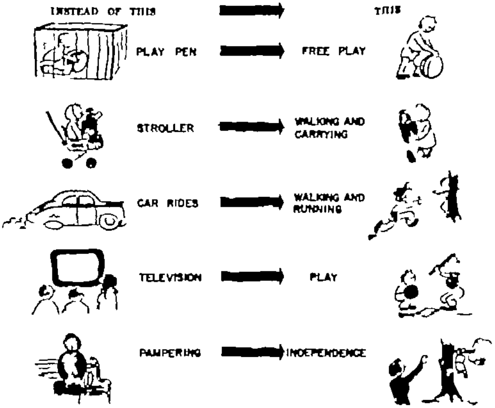
PRESCRIBE
physical activity
and exercise

Early physical activity after disease or injury

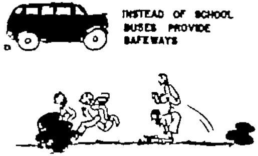
Physical activity as a part of geriatrics

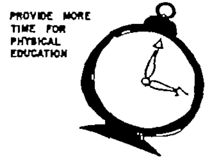
Avoid curtailment of physic l ctivity
herever pos ble

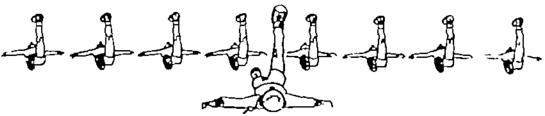
PREVENTION BY PARENTS

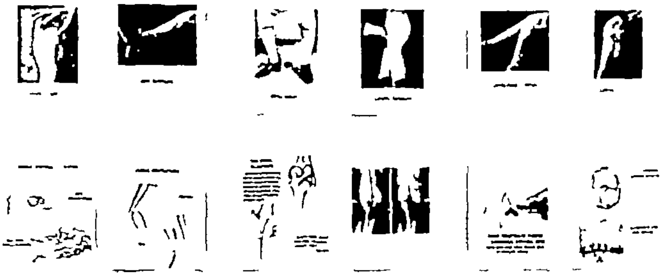


PREVENTION BY SCHOOLS





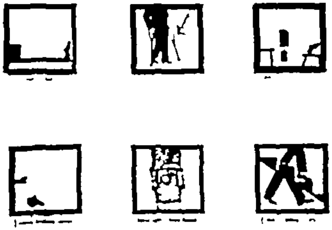




Evaluation and Treatment: Secondary Changes in Knee Dysfunction in Geriatric Patients.

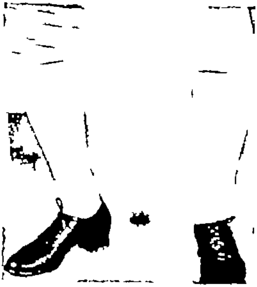
KEITH C. KEELER, Rehabilitation Center of Summit County Inc., Akron, Ohio

The exhibit outlines the symptomatology of ambulatory geriatric patients having knee disabilities such as Charcot joint or osteoarthritis. Photographs and drawings illustrate findings on clinical examination and associated anatomic changes. A model of a knee joint shows effect of muscle pull and ligamentous supporting structures on the joint. The exhibit also presents rational application of nonsurgical therapy to the knee joint in geriatric patient having changes secondary to the primary pathology such as limited range of motion, lateral instability reduced muscle strength.

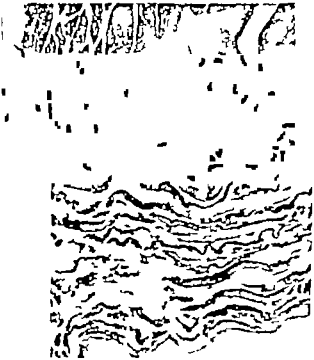


Flvation of patella.

W k q ad ic ps.

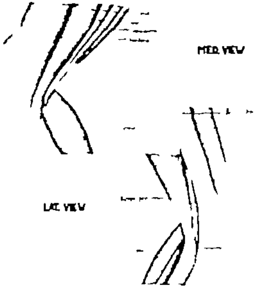


Genu m.



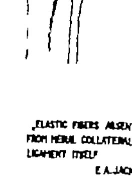
Phot micr gr phs show degrees of muscle fiber degener tion ass lated with impaired peripher l la ion

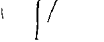
MUSCLE CONTRACTURES



PAIN ARISING IN LIGAMENTS

IN STUDIES BY PAUL C. ROOFE, DEPT. OF ANATOMY, KANSAS UNIVERSITY SCHOOL OF MEDICINE, EVIDENCE OF ABUNDANT INNERVATION OF LIGAMENTOUS STRUCTURES BY NON-MYELINATED AFFERENT FIBERS

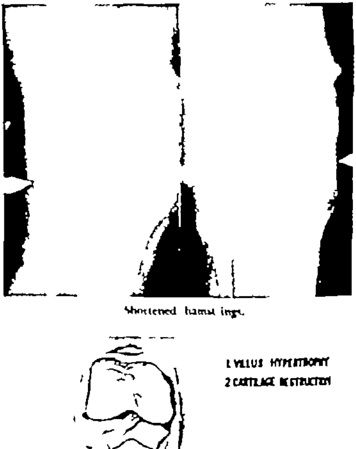




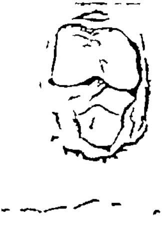
I I I I

I im ted nge of motion.

C m mc d jst



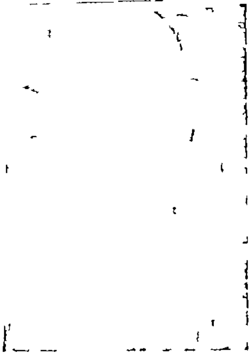
Shortened hamst ings.

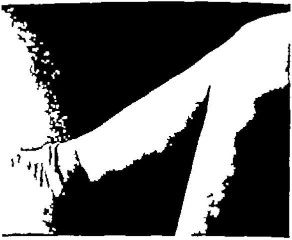


RAISED PERIARTICULAR MARGINS OF SUBCHONDRAL EPIPHYSEAL BONE
NOTE BONY SPUR ABOVE INVADES BASE OF ARTICULAR CAPSULE

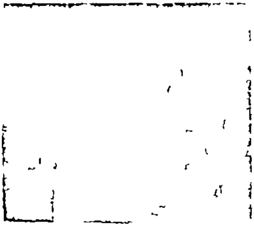
TABULATION OF SIGNS AND SYMPTOMS IN 22 PATIENTS

Case #	Sex	Age	Diagnosis	Quadriceps Strength	Knee Range	[illegible]	Lateral Instability	[illegible]	Genu [illegible]	Achy knee	Stiffness on rest	Pain on weightbearing	Pain on stair climbing	Enlargement of joint	Bed or Chair	Ambulatory
1	F	62	RA	T P	0					✓					✓	
2	M	62	RA	P	70°	✓	✓					✓		✓	✓	
3	F	63	RA	P	20°	✓		✓				✓			✓	
4	M	65	RA	F	60°	✓	✓	✓				✓	✓	✓		✓
5	F	64	RA	P	55	✓		✓				✓			✓	
6	F	62	RA	T	10°							✓			✓	
7	M	62	RA	P	50°	✓						✓			✓	
8	F	62	RA	G	100°	✓						✓	✓			✓
9	M	64	RA	F	40°			✓				✓		✓		✓
10	F	69	RA	G	90°			✓				✓	✓			✓
11	F	62	RA	G	120°								✓			✓
12	F	76	R+OA	P	60°	✓		✓	✓		✓	✓	✓	✓		✓
13	F	79	OA	G-	90°		✓		✓				✓	✓		✓
14	M	76	OA	G	120°						✓					✓
15	F	79	OA	F	90°		✓	✓				✓				✓
16	F	76	OA	F	90°	✓	✓	✓	✓		✓	✓	✓			✓
17	F	65	OA	G	130°						✓		✓			✓
18	F	76	R+OA	P	20°										✓	
19	M	82	Charcot	P	130°		✓		✓			✓	✓	✓		✓
20	F	76	OA	F	120°						✓					✓
21	F	79	OA	F	120°	✓	✓				✓	✓	✓			✓
22	F	75	OA	G	90°			✓			✓	✓	✓			✓



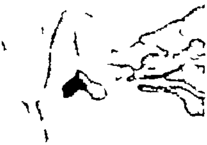


1 ited nge of motion.



Shortened hamst ings.

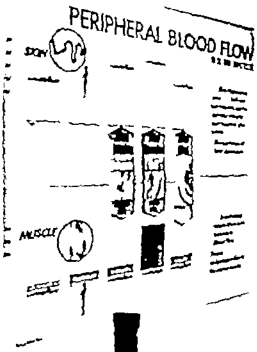
(s d ju

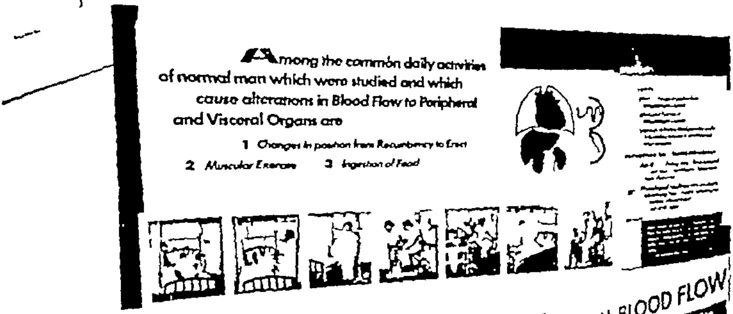


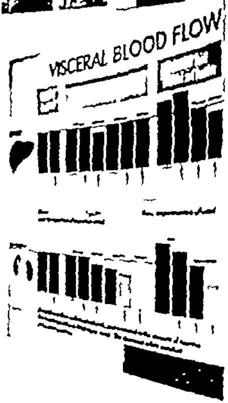
RAISED PERIARTICULAR MARGINS
C SUBCHONDRAL EPIPHYSEAL BONE
NOTE BONY SPUR ABOVE INSERTS E
OF ARTICULAR CAPSULE

TABULATION OF SIGNS AND SYMPTOMS IN 22 PATIENTS

Case #	Sex	Age	Diagnosis	Quadriceps Strength	Knee Range	[illegible] Patella	Lateral Instability	[illegible]	Genu [illegible]	Ankle [illegible]	[illegible] at rest	Pain on Weightbearing	Pain on [illegible]	Enlargement of joint	Bed or Chair	Ambulatory
1	F	62	RA	T P	0°					✓					✓	
2	M	62	RA	P	70°	✓	✓					✓		✓	✓	
3	F	63	RA	P	20°	✓		✓				✓			✓	
4	M	65	RA	F	60°	✓	✓	✓				✓	✓	✓		✓
5	F	64	RA	P	55	✓		✓				✓			✓	
6	F	62	RA	T	10°							✓			✓	
7	M	62	RA	P	50°	✓						✓			✓	
8	F	62	RA	G	100°	✓						✓	✓			✓
9	M	64	RA	F	40°			✓				✓		✓		✓
10	F	69	RA	G	90°			✓				✓	✓			✓
11	F	62	RA	G	120°								✓			✓
12	F	76	R+OA	P	60°	✓		✓	✓		✓	✓	✓	✓		✓
13	F	79	OA	G-	90°		✓		✓				✓	✓		✓
14	M	76	OA	G	120°						✓					✓
15	F	79	OA	F	90°		✓	✓				✓				✓
16	F	76	OA	F	90°	✓	✓	✓	✓		✓	✓	✓			✓
17	F	66	OA	G	130°						✓		✓			✓
18	F	76	R+OA	P	20°										✓	
19	M	82	Charcot	P	150°		✓		✓			✓	✓	✓		✓
20	F	76	OA	F	120°						✓					✓
21	F	78	OA	F	120°	✓	✓				✓	✓	✓			✓
22	F	75	OA	G	90°			✓			✓	✓	✓			✓







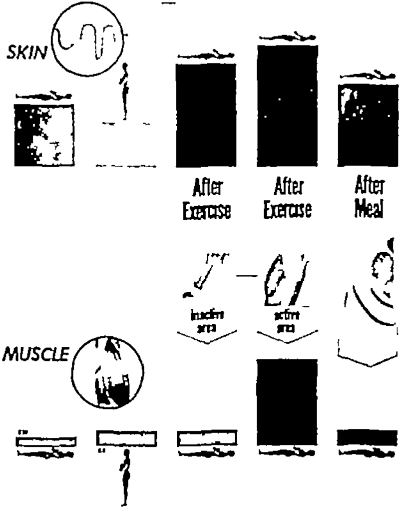
Exercise and Peripheral and Visceral Blood Flow

KARL HARPUDER and IRWIN D STEIN, Montefiore Hospital, New York.

The part tion of blood to skin and muscle circulation, the liver and the k dney n normal man after moderately heavy exercise has been studied, including the effect of change of position from the horizontal to the erect.

PERIPHERAL BLOOD FLOW

IN CC MIN 100 G TISSUE



Skin Hyperemia occurs in 1 both non exercised limb and the exercised limb after exercise and 2 after a meal

This is a means of heat dissipation

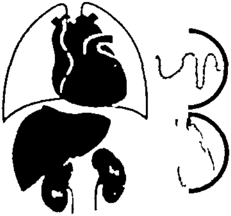
In exercising muscle there is an increase in Blood Flow

There is no decrease in flow to the inactive muscles

Among the common daily activities of normal man which were studied and which cause alterations in Blood Flow to Peripheral and Visceral Organs are

1 Changes in position from Recumbency to Erect

2 Muscular Exercise *3 Ingestion of Food*



PROCEDURES

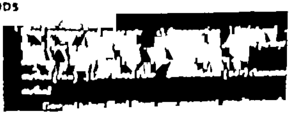
1. *Effect of change in position from* RECUMBENCY → ERECT
2. *Measured Exercise in* RECUMBENCY → ERECT
3. *Ingestion of Protein Meal preceded and/or followed by exercise in recumbent and erect positions*

PERFORMED ON *Normal male volunteers*

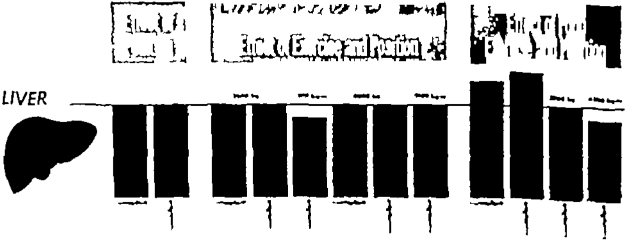
Age 18 26 Fasting state _ Basal rest period of one hour in recumbency Temperature controlled room 72

Physiological conditions were simulated by abstaining from i cardiac catheterization ii bladder catheterization iii use of tilt table

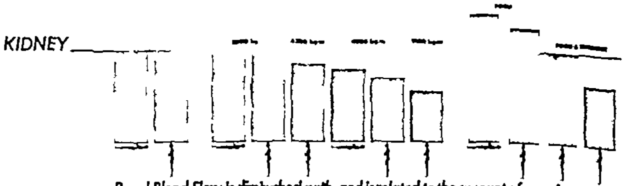
METHODS



VISCERAL **BLOOD FLOW**



Blood Flow to the liver and gastro intestinal tract in these experiments is affected only by ingestion of a protein meal.



Renal Blood Flow is diminished with, and is related to the amount of exercise The threshold value is 3500 kg/m work. The decrease is first manifest in the erect position

CONCLUSIONS

CONCLUSIONS

RESULTS OF [illegible] YEARS RESEARCH STUDY OF THE PYLON PROGRAM

PROCESSED—[illegible] PYLONS

[illegible] PLEXIGLAS CONTRAPTIONS DEVELOPED [illegible] JOINTS OF STUMPS

EARLY CONDITIONING OF STUMP

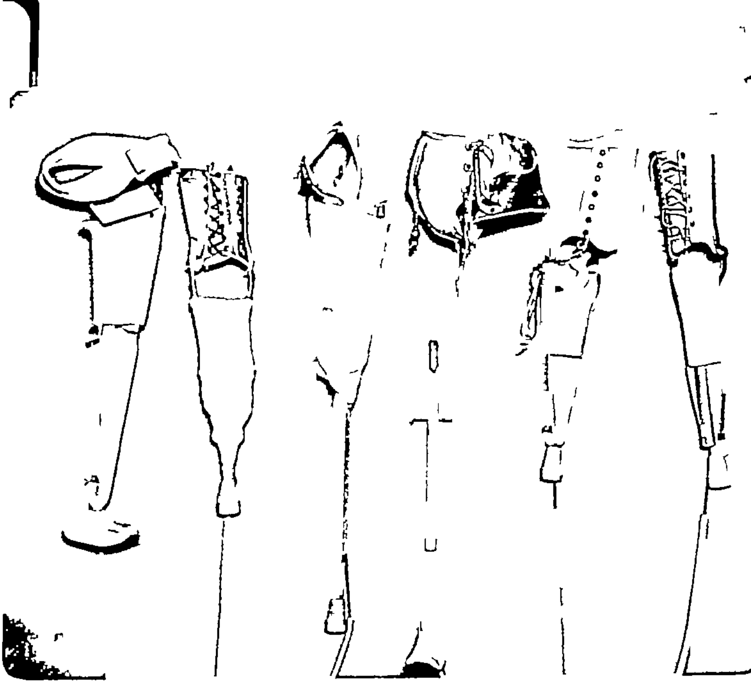
PATIENTS WALKED EARLY IN THE REHABILITATION PROGRAM

PATIENTS WERE HOSPITALIZED FOR [illegible] PERIODS AFTER RECEIVING PYLONS

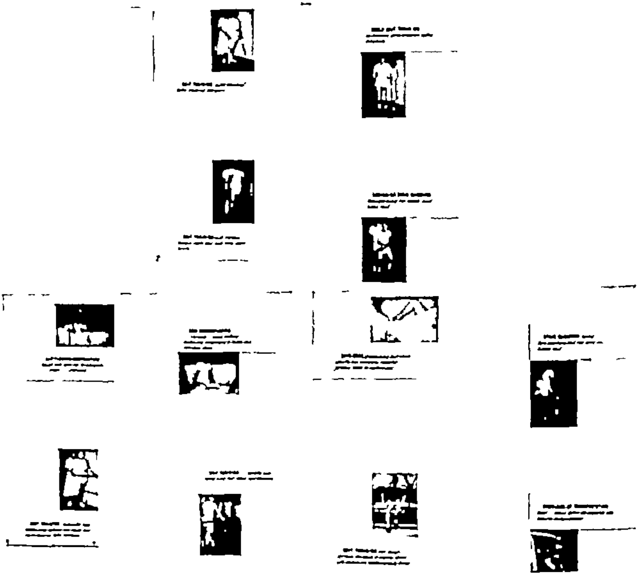
PATIENTS RECEIVED THE PERMANENT PROSTHESES EARLIER [illegible] THEIR REHABILITATION PROGRAM

[illegible] BE [illegible] WERE NECESSARY [illegible] THE PERMANENT PROSTHESES

COST OF PYLONS WAS NOMINAL



AMBULATION OF THE ELDERLY AMPUTEE



Ambulation of the Elderly Amputee.

HAROLD DINKEN JOHN S YOUNG and BRUCE A. SCOTT
University of Colorado School of Medicine, Denver

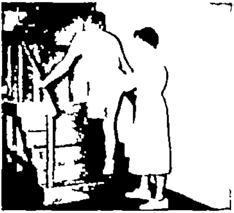
The elderly amputee presents many problems that are not met in the conventional approach to the amputee in the lower age groups. Frequently he is denied the opportunity to even attempt ambulation because of the high cost of a prosthesis. This exhibit presents an approach to this problem. Several low cost prostheses are displayed with illustrations of techniques for their use in the rehabilitation of the elderly amputee.

1. AMBULATION, SELF-CARE, AND MAXIMAL PHYSICAL INDEPENDENCE ARE REALISTIC GOALS IN REHABILITATION OF THE AMPUTEE.

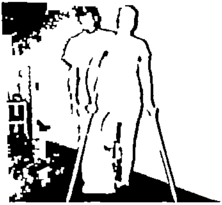
2. SPECIAL DEVICES AND TECHNIQUES ARE REQUIRED TO GIVE THE ELDERLY INDIVIDUAL A CHANCE TO ATTAIN THESE GOALS.

3. CONVENTIONAL CONCEPTS AND CRITERIA MUST BE LIBERALIZED IN DETERMINING FEASIBILITY OF AMBULATION FOR THE ELDERLY AMPUTEE.

C it t lniug slug l eral pylon training prosthesis

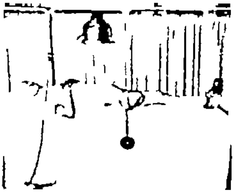


Beginning stair climbing: Instruction using hersal pylon prosthesis and hand rail.



Ga t t ing w h crut hes, using stable g w th lose supervision

Beginning stai limbing: technique using one crut h nd hand rail.



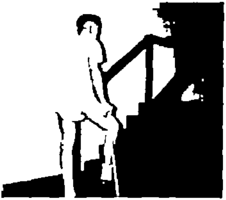
H p flexion cont acture tre ed with l fra rel f r rela ion nd weight for stret hing

Arm recond ioning preliminary to crutch w lk ng, emphasizing strengthening of bi eps and la issim dorsi

Gait training in parallel bars, emphasizing balance and weight bearing on unilateral pylon prosthesis.

Gait training in parallel bars using a low cost brace type of prosthesis.

Skin care of remaining limb, which usually has marginal vascular sufficiency must be emphasized.



Stair climbing using suction type of prosthesis, one cane and hand rail.

Gait training over rough terrain designed to confront patient with ambulation problems of daily living

Problems of transportation must be solved before the amputee can achieve independence.

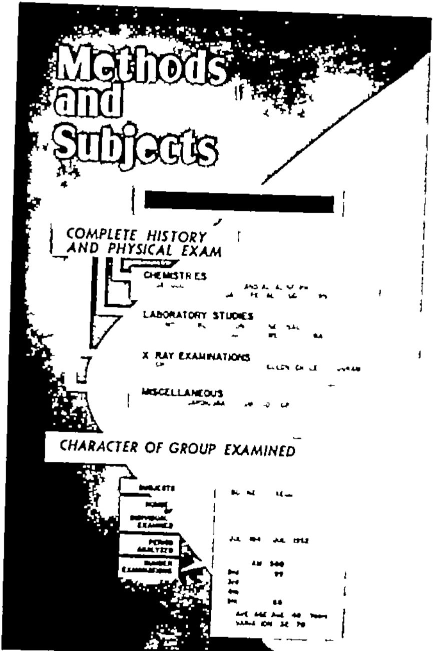
SECTION ON PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

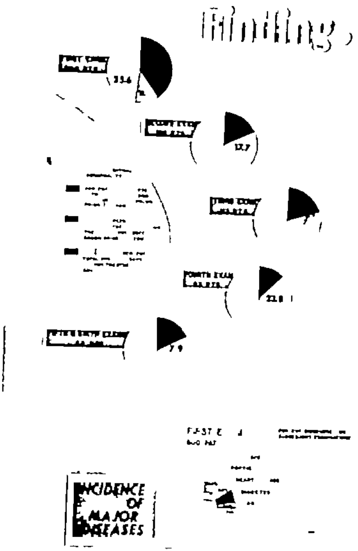
BILLINGS BRONZE METAL

Periodic Health Appraisal. Method and Results of Examinations.

ROBERT J BOLT, O T MALLERY JR., and C. J TUPPER, University of Michigan, Ann Arbor Mich

This exhibit demonstrates the method of routine periodic examinations as carried out by the department of internal medicine and the institute of industrial health of the University Hospital. All examinations are done on an inpatient basis and consist of complete history and physical examinations, as well as complete laboratory and x-ray studies. This has given an unusual opportunity to evaluate the reliability and value of individual laboratory and x-ray examinations when utilized in asymptomatic individuals. A description of the manner in which the examinations are carried out is presented, together with the findings on 943 examinations done over a five year period. There is also depicted the value of routine chest, upper gastrointestinal tract, gallbladder and colon x rays, as well as the value of individual laboratory tests, such as fasting blood sugar, nonprotein nitrogen, uric acid and alkaline phosphatase, blood cell counts, and serologic tests.

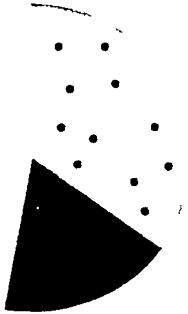

Methods and Subjects
COMPLETE HISTORY AND PHYSICAL EXAM
CHEMISTRIES
LABORATORY STUDIES
X RAY EXAMINATIONS
MISCELLANEOUS
CHARACTER OF GROUP EXAMINED


Findings
33.6
12.7
22.8
7.9
INCIDENCE OF MAJOR DISEASES

CHOLECYSTOGRAM

867 EXAMINATIONS
75 (8 7%) ABNORMAL

TYPE OF ABNORMALITY

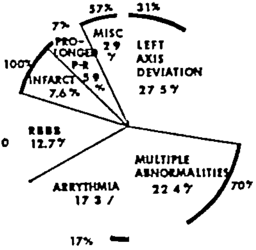


STONES 35%

FAINT VISUALIZATION 47%

NON VISUALIZATION 18%

RESULTS OF ELECTROCARDIOGRAMS



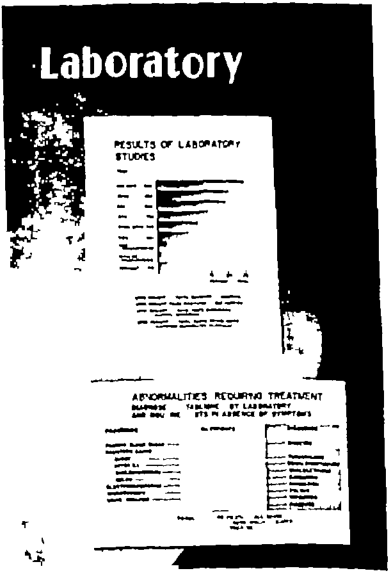
EKG - 868 EXAMS

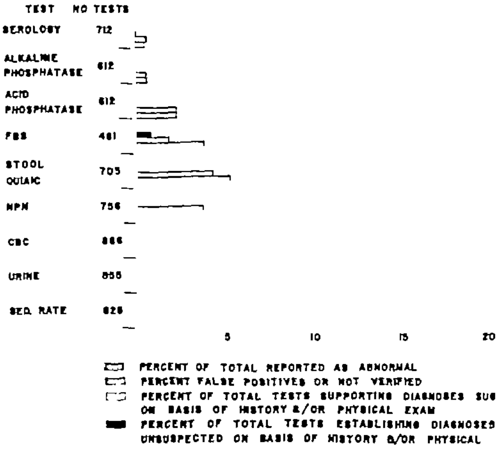
PERCENT REPORTED AS ABNORMAL NO CLINICAL EVIDENCE OF HEART DISEASE

PERCENT ABNORMAL & CLINICAL E IDENCE OF HEART DISEASE

ABNORMAL EKG
236-272% OF TOTAL

PERCENT OF EACH GROUP ASSOCIATED WITH SIGNS AND/OR SYMPTOMS OF HEART DISEASE


Laboratory
RESULTS OF LABORATORY STUDIES
ABNORMALITIES REQUIRING TREATMENT


TEST
NO TESTS
SEROLOGY 712
ALKALINE PHOSPHATASE 612
ACID PHOSPHATASE 612
FBS 461
STOOL GUAIAC 705
NPN 756
CBC 866
URINE 855
SED. RATE 825
5
10
15
20
PERCENT OF TOTAL REPORTED AS ABNORMAL
PERCENT FALSE POSITIVES OR NOT VERIFIED
PERCENT OF TOTAL TESTS SUPPORTING DIAGNOSES SUG ON BASIS OF HISTORY &/OR PHYSICAL EXAM
PERCENT OF TOTAL TESTS ESTABLISHING DIAGNOSES UNSUSPECTED ON BASIS OF HISTORY &/OR PHYSICAL

CERTIFICATE OF MERIT

Diagnosis and Treatment of Intoxication from Organic Phosphorus Insecticides.

MARVIN A. EPSTEIN and GUSTAVE FREEMAN Chemical Corps Medical Laboratories, Army Chemical Center Md.

This exhibit reviews the history of the anticholinesterase insecticides and their relationship to the nerve gases and presents a map showing the areas and crops involved. The mechanism of action is described by formulas and schematic drawings, and routes of absorption are shown as well as hazards to manufacturing plant employees, mixers, professional sprayers, and airplane pilots. Precautionary measures and special equipment are illustrated. The pathophysiology of intoxication, supplemented by results of physiological studies in animals, and then a detailed display of the clinical picture in human poisoning are presented. Symptoms and signs in various degrees of intoxication are given, with results of treatment derived from a study of a number of severe cases in which a detailed analysis of therapy was made. Typical pathological findings in fatal cases are presented.

TRADE NAMES OF PHOSPHORUS INSECTICIDES

PARATHION

ALKRON
APHAMITE
CHIPMAN P.A.R.
COMPOUND 3422
COROTHION
DNTP
DOW EDCO 15
DPP
E 605
GEIGY PARATHION
GENITHION
KILPHOS
LETHALAIRE G-54
MACKOTHION
NIRAN
PARADUST
PARAPHOS
PENPHOS
PHOSKIL
PLANTTHION
SNP
SULPHOS
SUPERKILL
THIOPHOS
VAPOPHOS

TEPP

BLADAN
BLADEX
FOSVEX
HET
HEXAMITE
KILLEX
KILMITE
NIFOS-T
PLANTPHOS
TEP
TETRATONE
TETRON
VAPOTONE

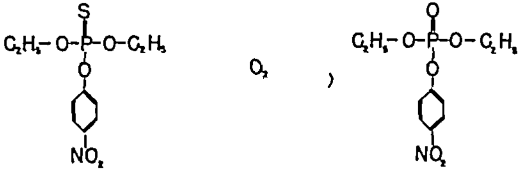
ANTICHOLINESTERASES & RELATED INSECTICIDES

PARATHION

(INSECTICIDE)

PARAOXON

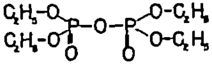
(ANTI-CHOLINESTERASE ANALOGUE)



NON-VOLATILE LIQUID
INSOLUBLE IN WATER

TEPP

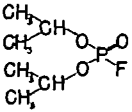
(TETRAETHYL PYROPHOSPHATE)



VOLATILE, WATER SOLUBLE LIQUID

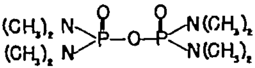
DFP

(DIISOPROPYL FLUOROPHOSPHATE)



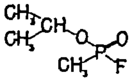
OMPA

(OCTAMETHYL PYROPHOSPHORAMIDE)



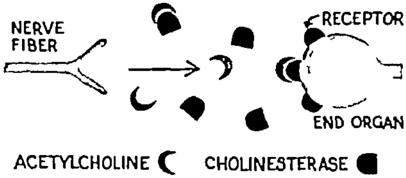
SARIN

(NERVE GAS)

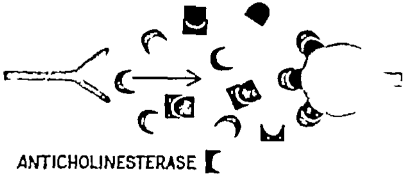


VOLATILE, ODORLESS, WATER SOLUBLE

MECHANISM OF ACTION OF ANTICHOLINESTERASE COMPOUNDS



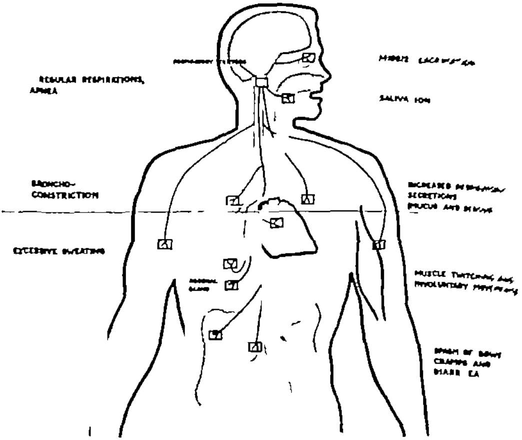
Acetylcholine mediates nerve impulses to end organs. Cholinesterase regulates the amount of Acetylcholine, prevents accumulation by hydrolyzing Acetylcholine to choline and acetic acid



Organic phosphate (anticholinesterase) inactivates cholinesterase by combining with it. Then acetylcholine accumulates, and produces excessive stimulation of the end organ

Atropine blocks the action of excess acetylcholine at the end organs

SITES OF ACTION OF ANTICHOLINESTERASE COMPOUNDS



ACTIONS VIA THE PARASYMPATHETIC NERVOUS SYSTEM AND THE MOTOR NERVES TO SKELETAL MUSCLE ARE SHOWN

SYMPTOMS OF ANTICHOLINESTERASE POISONING

(IN APPROXIMATE ORDER OF APPEARANCE)

NAUSEA	INCOORDINATION
VOMITING	SLURRED SPEECH
DIZZINESS	CONFUSION
HEADACHE	DIFFICULTY IN BREATHING
WEAKNESS	COUGH
SHAKINESS	EXCESSIVE RESPIRATORY MUCUS
SWEATING	SALIVATION
CRAMPS DIARRHEA	FROTHING
MIOSIS	STUPOR
DIM OR BLURRED VISION	
MUSCLE TWITCHING	

Onset is likely to be slow and insidious with Parathion or Ompa
More rapid, sometimes fulminating onset is characteristic of ingested Tepp or inhaled nerve gas
Tepp is 10 times more toxic than Parathion.

PHYSICAL SIGNS OF ANTICHOLINESTERASE POISONING

(IN ORDER OF OBSERVED FREQUENCY)

MIOSIS	DYSPNEA
ABNORMAL RESPIRATIONS (RATE AND/OR RHYTHM)	CONVULSIONS
SWEATING	FECAL INCONTINENCE
TACHYCARDIA	ABNORMAL RESPIRATIONS (DEPTH)
TWITCHING	DISTURBED SENSORIUM
COMA	VASOMOTOR SKIN CHANGES
RALES	RHONCHI
HYPERTENSION	TRACHEAL OR PHARYNGEAL MUCUS
CYANOSIS	NOISY RESPIRATIONS

DIAGNOSIS

- HISTORY OF CONTACT
- MIOSIS
- NAUSEA VOMITING OR DIZZINESS
- TWITCHING OF MUSCLES
- INCOORDINATION
- DYSPNEA
- INCREASED RESPIRATORY SECRETIONS

LABORATORY FINDINGS

CHOLINESTERASE (Red Blood Cell) minimally significant change:
- $<0.60\ \Delta pH$ units/hour or
- $<85\%$ of control value (fall of $>15\%$)

WBC $>$ 10,000

ALBUMINURIA

HYPERGLYCEMIA AND GLYCOSURIA

HYPERPHOSPHATEMIA

DIFFERENTIAL DIAGNOSIS

MORPHINE POISONING - Quiet slow breathing without dyspnea, no evidence increased motor activity

SUNSTROKE - no sweating hyperthermia, no miosis

BARBITURATE INTOXICATION - pupils dilated Slow quiet respirations, stupor early

Pulmonary Edema - no miosis, muscle twitching

PRINCIPLES OF THERAPY

1) DECONTAMINATION OF SKIN Shower remove clothes and shower or bathe again. Aide personnel and casualties must mask if atmosphere is contaminated

2) ATROPINE. 2 mg I.M. Stat and repeat at least every 10 30 minutes PRN. Continue until completely free of signs and symptoms. Maintain close observation for 24 hours

3) ARTIFICIAL RESPIRATION Preferably with positive pressure oxygen, if shallow irregular respirations or apnea Maintain airway with suction and/or intubation.

4) ADJUNCTIVE MEASURES as indicated
   - a) fluids and electrolytes.
   - b) prophylactic antibiotics
   - c) cautious I.V. pentothal for convulsions

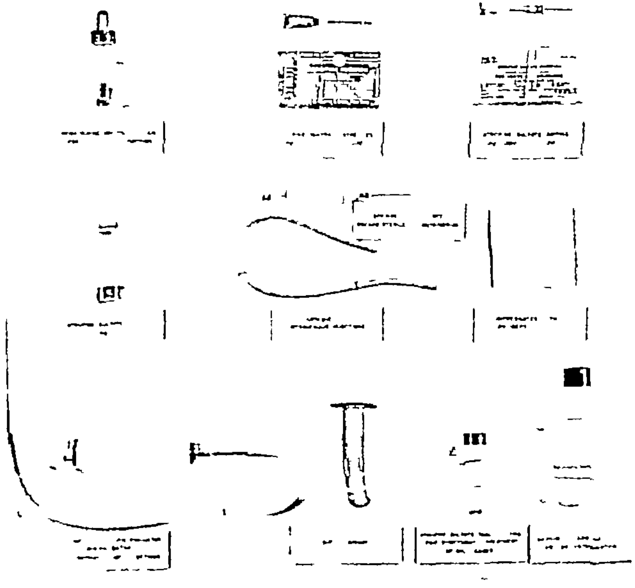
TEPP AND NERVE GAS MAY REQUIRE LARGER AMOUNTS OF ATROPINE (AS MUCH AS 30 mg. IN 2 [illegible]) AND PROMPT INITIATION OF T[illegible] IT

ATROPINE AND SURVIVAL IN PARATHION POISONING

	SURVIVAL	FATAL
GROSS AVERAGE TIME OF INITIAL ATROPINE (HOURS AFTER ONSET OF SYMPTOMS)	1.3	3 0
GROSS AVERAGE TOTAL ATROPINE (MG. DURING FIRST 5 HRS. OF SYMPTOMS)	3.1	0.8

	SURVIVORS (median distribution)
HIGH ATROPINE EARLY	85 %
LOW ATROPINE, EARLY	83 %
HIGH ATROPINE LATE	50 %
LOW ATROPINE LATE	21 %

CONTENTS OF FIRST AID KIT FOR ANTICHOLINESTERASE POISONING



BE SAFE WHEN USING PARATHION

PATHOLOGY—PARATHION POISONING

Section of lung [illegible] (Courtesy of Russell S. Fisher, M.D., Office of the Medical Examiner, Baltimore)

PATHOLOGY—TEPP POISONING

Section of lung in [illegible] old boy who died within 7 minutes after ingesting TEPP (Courtesy of W. C. Moran, M.D., and N. C. Klendshoj, M.D., Buffalo, N.Y.)

DO THIS NOT THIS

DO THIS NOT THIS

DO THIS NOT THIS

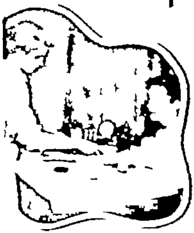
BURN OR BURY ALL CONTAINERS

DO THIS NOT THIS

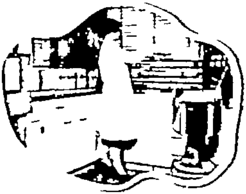
DO THIS NOT T

DO THIS NOT THIS

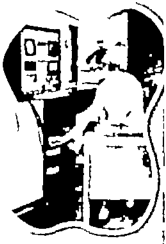
PROCEDURE



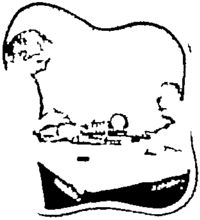
Injection of radio-iron



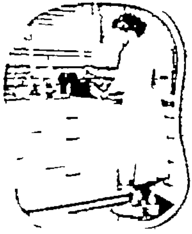
Preparation of specimens



Assay of radioactivity



Collection of samples

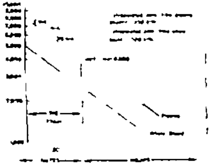


Analysis for iron concentration

Calculation of results

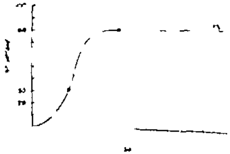
EVALUATION

DISAPPEARANCE RATE



The counts per minute of 5 plasma samples are plotted.
The line is extrapolated to zero time when counts per minute equal 8000.
Half time of disappearance of Fe^{59} from the blood is reached when count equals 8000/2 or 4000 (T/2).

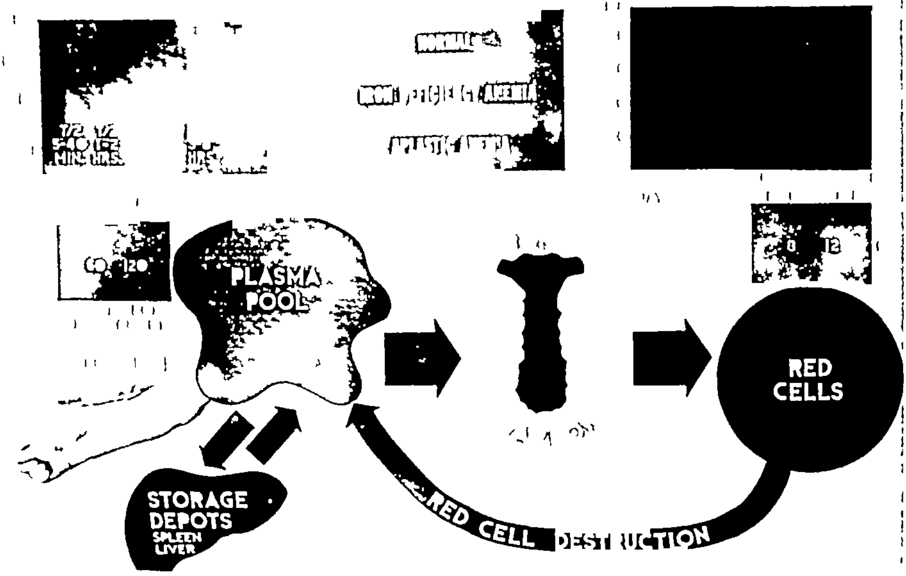
RED CELL UTILIZATION



Whole blood samples are drawn at 3, 7, and 14 days.
The radioactivity of each sample is divided by the extrapolated zero-time whole blood activity to obtain approximate percentage reappearance or utilization.

CONDITION	HALF TIME IN HOURS	PLASMA IRON CONC. IN µg %	REAPPEARANCE IN RBC
Normal	1 2	70-120	70-90% in 7 days
Iron Deficiency	0.1 0.3	0 30	90-100% in 3 days
Aplastic	3 6	150-300	10-20% in 1-3 weeks
Pernicious Before Therapy	0 0.4	150-300	10-20% in 1-3 weeks
Pernicious During Therapy	0.1 0.3	20 200	85-95% in 7 days
Hemolytic	0.1-0.4	40 150	85-95% in 3 days
Mediterranean	0.2 0.4	100 200	10-20% in 3 weeks

RADIOIRON TRACER STUDIES IN HEMATOPOIETIC DISORDERS



COMPARISON

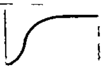
RADIOIRON [illegible]

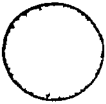
APLASTIC ANEMIA

T/2 4 HOURS	HBG 8 0 GM%	RETICS 0 1%
IRON 250µg%	RBC 2 7 M	MCV 85
RBC UPTAKE	HCT 23%	MCHC 35

IRON DEFICIENCY ANEMIA

T/2 15 MIN	HBG-8 0 GM%	RETICS 1 0%
IRON 20µg%	RBC 3 8 M	MCV 79
RBC UPTAKE	HCT 30%	MCHC 27





PERNICIOUS ANEMIA

T/2 30 MIN	HBG 8 0 GM%	RETICS-1 2%
IRON 200µg%	RBC 2 0 M	MCV 130
RBC UPTAKE	HCT 26%	MCHC 31

ADVANTAGES

1. DIAGNOSIS OF HEMATOPOIETIC DISORDERS MEASURES THE RATE OF PRODUCTION OF HEMOGLOBIN, RATHER THAN HEMOGLOBIN LEVELS AND CELLULAR MORPHOLOGY

2. EVALUATION OF THERAPEUTIC MEASURES INDICATES THE QUANTITATIVE RESPONSE OF ANEMIA OR POLYCYTHEMIA TO THERAPY BEFORE ANY DETECT ABLE CHANGE IN HEMOGLOBIN CONCENTRATION

3. DETERMINATION OF DEPRESSION OF HEMATOPOIESIS DETECTS INJURY DUE TO TOXIC AGENTS AND ACTS AS AN INDEX OF TOLERANCE IN RADIO THERAPY AND CHEMOTHERAPY DEMONSTRATING TEMPORARY DAMAGE WHEN A DROP IN HEMOGLOBIN WILL OCCUR LATE OR NOT AT ALL.

RADIOIRON TURNOVER STUDIES IN HEMATOPOIETIC DISORDERS HAVE THE POTENTIAL FOR ACHIEVING AS GREAT A CLINICAL USEFULNESS AS RADIOIODINE STUDIES IN THYROID DISEASE.

Osteopetrosis in Adults.

C. L. HINKEL, D. D. BEILER and T. R. WILSON, Geisinger Memorial Hospital and Foss Clinic, Danville, Pa.

The roentgenologic characteristics of osteopetrosis in adults are illustrated by the presentation of four siblings over 50 years of age who have the disease. The familial characteristics, distributional pattern, differential diagnosis, and histological appearance are emphasized. The authors believe their patients have recovered from the active form of the disease.

Roentgen Findings in Sprue.

RICHARD H. MARSHAK and BERNARD S. WOLF, Mount Sinai Hospital, New York, and A. I. FRIEDMAN, Hackensack, N. J.

Fifty patients with sprue were studied with repeated small intestine examinations before and after therapy with antianemic and steroid preparations. The roentgen findings in 70% of the cases were characteristic, consisting of luminal dilatation of the jejunum, delayed segmentation, increased secretions, and abnormal scattering. Because the roentgen pattern is characteristic in such a large majority of cases, the term sprue pattern has been used to describe the above findings rather than the nonspecific term deficiency pattern. Films demonstrating roentgen improvement following therapy are shown, as well as differential diagnosis. The term deficiency pattern has been used to include such a large variety of disorders that its meaning has been diluted. Many of the diseases previously called deficiency pattern have a characteristic pattern that can be more accurately described and classified.

Nonsurgical Cholangiography

WILLIAM H. SHEHADI, New York Polyclinic Medical School and Hospital, New York.

Visualization of the biliary tract without surgical intervention may be performed by means of oral and intravenous cholangiography. Oral cholangiography, following administration of telepaque, will visualize the gallbladder and, in necessity, the extrahepatic ducts, particularly the cystic and common bile ducts. In abnormal conditions with distal obstruction or spasm of the sphincter of Oddi, the hepatic ducts may be visualized by reflux. Intravenous cholangiography, following injection of cholografin, will result in visualization of the major intra and extrahepatic bile ducts within 10 to 20 minutes and through a 60 minute period. This is of immeasurable value in patients in which cholecystectomy has been done. Optimal gallbladder filling is at 2 to 2½ hours. Studies of normal and [illegible] anatomy and physiology are presented, as well as a variety of pa[illegible]ogical conditions.

Intravenous Cholangiography in the P[illegible] Syndrome.

JOHN L. MCCLENAHAN, JOHN A. EVANS, and PAUL W. BRAUNSTEIN, New York Hospital-Cornell Medical Center, New York.

Results are presented of intravenous cholangiography in more than 100 patients whose symptoms of right upper quadrant pain and indigestion persisted after cholecystectomy. In some of these the common bile ducts appeared to be normal. In a relatively high percentage of others retained calculi were shown in the common duct on routine films and tomograms. In other patients the common duct was markedly dilated, or, because of jaundice, could not be shown at all. Angulation of the duct, compression by adhesive bands, stenosis, and spasticity of the sphincter are also demonstrated.

Roentgenographic Patterns in Colon Obstruction.

EDWARD F. DUBOIS, C. ROBERT HUGHES, and CHARLES M. GREENWALD, Cleveland Clinic Foundation, Cleveland.

The exhibit reviews radiological signs in colon obstructions, emphasizing the distinction between distal and proximal colon lesions as regards colon contents and small intestine status.

Body Section Radiography in the Study of the Heart and Great Vessels with Particular Reference to Left Atrial Enlargement.

GEORGE T. WOHL and BERNARD H. P[illegible], Veterans Administration Hospital, Philadelphia.

This exhibit describes a new method for the demonstration of left atrial enlargement in cases in which the [illegible] is not [illegible] defined in conventional roentgenograms. Th[illegible] application of body section radiography has not been previously described. This method [illegible] as an aid in the diagnosis of mitral valvular disease [illegible]. This method is of particular importance in view of the frequency today of valvular surgery for mitral stenosis. The exhibit also describes the application of body section radiography in the study of the heart and great vessels for other pathology.

The Deep Cerebral Veins Studied by Rapid Sequence Biplane Stereoscopic Cerebral Angiography

ROBERT E. PAUL, PAUL M. LIN, W. EDWARD CHAMBERS, MICHAEL SCOTT and HERBERT M. STAUFFER, Temple University Hospital, Philadelphia.

The normal anatomy of the deep cerebral veins with their relationship to surrounding structures is presented. The importance of the venous angle of the brain, as a constant landmark at the site of the foramen of Monro, is illustrated in normal individuals and in patients [illegible] taking intracranial lesions. Charts for the orientation of the venous [illegible] are illustrated and their significance summarized. The [illegible] material is based on a series of 400 cerebral angiograms, using the biplane stereoscopic, rapid serial film technique, with a pair of stereoscopic films taken at right angles to each other every 0.6 of a second. The venous phase of the cerebral angiogram (phlebogram) is observed with regularity and is of definite diagnostic value alone or in combination with the arterial phase in localizing intracranial disease. Only a single injection of contrast material (10 cc.) is necessary for a complete study of the arterial, capillary and venous phases when the biplane stereoscopic unit is used.

Laminography of the Sternoclavicular Area.

LAWRENCE REYNOLDS, GEORGE F. BOOKER, and HAROLD E. FULTON JR., Harper Hospital, Detroit.

The sternoclavicular area is examined with difficulty by ordinary roentgenographic methods. Laminography is particularly valuable in visualization of the manubrium, manubriosternal joint, costosternal articulations, and sternoclavicular joints. Details of the laminographic technique are presented, accompanied by representative cases illustrating the various diseases affecting the sternoclavicular area.

The Lower Esophagus and Esophagogastric Junction.

COSTANTINO ZAINO and MAXWELL H. POPPEL, New York University College of Medicine, New York, and CHARLES F. BLAZEK, St. Anthony's Hospital, Woodhaven, L. I., N. Y.

This exhibit is a roentgenologic study by the conventional and "air contrast" technique on normal individuals and on patients with pneumoperitoneum. The demonstration of the roentgen anatomy will include the phrenic ampulla, inferior esophageal sphincter, gastroesophageal vestibule, constrictor cardia, and phrenoesophageal membrane. Pneumoperitoneum studies will demonstrate the respiratory and positional effects on the abdominal segment of the esophagus.

Ulcerative Colitis Roentgen Manifestations.

HENRY WOLOSHIN and JOHN A. KIRKPATRICK, Temple University Hospital, Philadelphia.

The roentgen findings in early and late cases are illustrated. The value of follow-up studies is noted. The importance of deciding extent of involvement is stressed and the signs of malignant changes are reviewed.

The Roentgen Diagnosis of Hyperrugosity of the Stomach.

Robert Sherman, Memorial Hospital, New York, and Daniel Wilner, Atlantic City N J

Hyperrugosity is the term employed to describe a nonmalignant condition of the stomach characterized by the presence of voluminous mucosal folds that simulate the convolutions of the brain and that may at times produce filling defects of tumor-like character. Many such cases have been observed during the past seven years, most of which were discovered in asymptomatic individuals from the Strang Cancer Detection Clinic, Memorial Center. This condition assumes particular importance because of the frequency with which it may be confused roentgenologically with carcinoma, lymphoma, polyposis, and gastritis.

Irradiation of Bladder Cancer: Supervoltage Rotation, and Point Source Intracavitary Techniques.

Milton Friedman, New York University College of Medicine, New York, and Lloyd G Lewis, Georgetown University School of Medicine, Washington, D C.

Two new irradiation techniques for cancer of the bladder are presented. The point-source intracavitary technique entails placing a small radium capsule or a specially designed tiny radioactive cobalt pellet inside an inflated balloon. *Fifty patients were treated with this technique more than five years ago, and the results are analyzed.* The supervoltage rotation technique entails a horizontal beam of 2 million volt x-rays directed at a patient standing vertically on a rotating platform. Fifty patients who have been irradiated within the past three years are analyzed. Both procedures entail precision techniques, which are illustrated and demonstrated in detail. A clinical-pathological and radiosensitivity classification of bladder cancer is presented. *Specific tumor doses are suggested for each type.* The results suggest that irradiation will play an important role in future treatment of bladder cancer.

Radioactive Colloidal Gold in the Treatment of Effusions Resulting from Neoplasms.

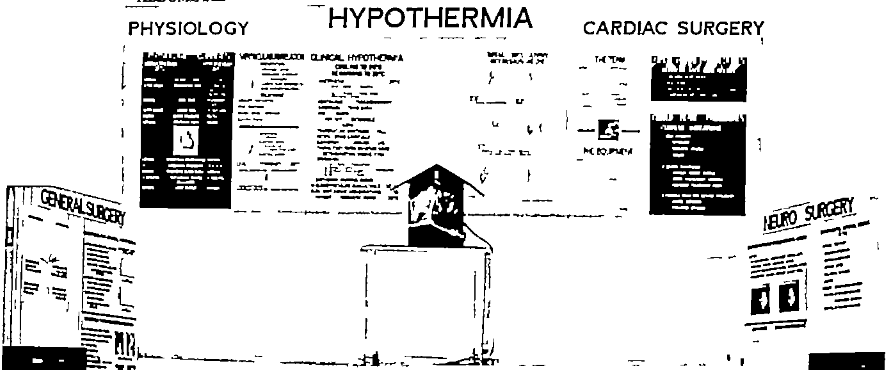
Gould A. Andrews, Ralph M. Kniseley and Marshall Brucer, Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn.

Colloidal gold is injected directly into body cavities containing effusions caused by malignant neoplasms. This treatment causes diminution or cessation of fluid accumulation in certain of these patients and thus affords a form of palliative treatment. The exhibit indicates the method of administering the isotope and illustrates its distribution and effects.

Gamma-Ray Emitting Isotopes Versus Radium.

Gilbert H. Fletcher, Fernando G. Bloedorn and Warren K. Sinclair, University of Texas, M. D. Anderson Hospital and Tumor Institute, Houston, Texas.

The advantages and disadvantages and the fundamental dosimetry problems in the use of the so-called radium substitutes, such as Cobalt-60, Cesium-137, gold-198, and tantalum-182, are demonstrated as follows: 1. Cobalt-60, Cesium-137 versus radium; 3-dimensional reconstructions of dosage patterns in implants according to the Paterson-Parker system for radium, Cobalt-60 and Cesium-137 needles. Photographs and essential [illegible] of equipment used for measurements at short distances, and color photographs of the reactions of implants are shown. 2. Tantalum-182. A sample of tantalum wire, a special inserter and roentgenograms of implants are shown. 3. Au 198 (radioactive gold). The Royal Cancer Hospital (London) technique that is the use of platinum coated gold grains and a three-dimensional inserter (gun).



GENERAL HYPOTHERMIA IN SURGERY

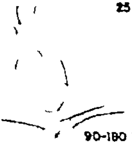
Henry Swan, Sylvan Bair, Emil Blair, Arthur Prevedel, Vernon Montgomery and Strother Marshall, University of Colorado Medical Center, Denver

The exhibit demonstrates the physiological effects, both beneficial and dangerous of general hypothermia in the range 20 to 30 C (68 to 86 F). It also gives an analysis of the potential and actual use in human surgery as derived from clinical experience with over 100 patients. The techniques of cooling and warming, safety precautions, indications for use, surgical methods, and results are demonstrated.

From the Department of Surgery, University of Colorado School of Medicine, Denver. Aided by Grant from the U S P H Service and The American Heart Association.

NORMOTHERMIA 37°C

HYPOTHERMIA 25 C



20-30 MINUTE OCCLUSION THORACIC AORTA

90-180 MINUTE OCCLUSION THORACIC AORTA

50% INCIDENCE HIND QUARTER PARALYSIS

0% INCIDENCE HIND QUARTER PARALYSIS

OBJECTIVES

Hypothermia is induced in order to lower metabolism, to reduce blood flow, to slow the heart and to reduce the use of anaesthetic agent in certain indicated circumstances.

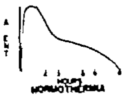
PROCEDURE

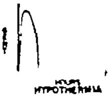
Free [illegible] medication con[illegible] and [illegible] the patient. [illegible]

INDICATIONS FOR GENERAL HYPOTHERMIA

1. PROLONGED REGIONAL ISCHEMIA
   - A. AORTIC ANEURYSM
   - B. CAROTID ANEURYSM
   - C. RESECTION OF LIVER
   - D. MASSIVE VISCERAL ABLATION (ABDOMINAL OR PELVIC CANCER)
2. HEPATO-CELLULAR DAMAGE (NON TOXIC ANAESTHESIA)
   - A. PORTO-CAVAL SHUNT
3. CHRONIC HYPOXIA
   - A. FIBRO THORAX
   - B. CHRONIC PULMONARY DISEASE

ANAESTHETIC AGENT CONSUMPTION





RESECT ON THORACIC AORTIC ANEURYSM

M.P. A [illegible] YEAR OLD GIRL—FALSE ANEURYSM [illegible] YEAR FOLLOWING RESECTION OF COARCTATION

RE-OPERATION

TEMPERATURE 29 C

DURATION 12 HRS.

AORTA OCCLUDED 1HR. 45MIN.

[illegible] RESECTION WITH HOMOGRAFT

NO SPINAL CORD DAMAGE

GOOD FEMORAL PULSES

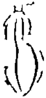
NORMAL BLOOD PRESSURE

PRE-OPERATIVE

POST-OPERATIVE

VENTRICULAR FIBRILLATION

PREVENTION



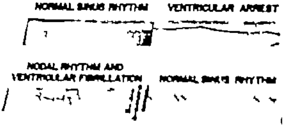
HYPERVENTILATION
PROSTIGMINE (CORONARY PERFUSION)
CAREFUL HEART MANIPULATION
AVOID CORONARY AIR EMBOLI

TREATMENT

ADEQUATE VENTILATION
START REWARMING
MANUAL CARDIAC COMPRESSION
ELECTRIC SHOCK

PROSTIGMINE (CORONARY PERFUSION)
ELECTRIC SHOCK
POTASSIUM CHLORIDE (CORONARY PERFUSION)
ELECTRIC SHOCK

LEAD II TEMPERATURE 26°C



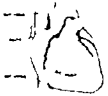
CLINICAL HYPOTHERMIA

COOLING TO 26°C
REWARMING TO 35°C

1 ANESTHESIA	37°C
A. SCOPOLAMINE AND DEMEROL B ETHER C SECOND PLANE — THIRD STAGE D. HYPERVENTILATION	
2. CONTINUOUS ELECTROCARDIOGRAPHY	37
3. IMMERSION IN TEPID BATH	37
4 ADD ICE CUBES	37
5 B P MAY NOT BE OBTAINABLE	37-31
6. OUT OF ICE BATH	31
7 TEMPERATURE CONTINUES TO FALL	30
8. PATIENT DRIED CAREFULLY	
9 DIATHERMY COILS AROUND PELVIS	28
10. THORACTOMY TAPES ON VENAE CAVAE	26
11. pH DETERMINATION (ABOVE 7.45)	
12. OPERATION	
A OCCLUSION OF CIRCULATION B REPAIR OF DEFECT C. RETREAT FROM HEART D RELEASE OF OCCLUSION } 3-8 MINUTES	
13. DIATHERMY WARMING BEGUN	26
14 BLOOD PRESSURE AUSCULTABLE	30-35
15. PATIENT AWAKE AND BREATHING	35
16. PATIENT TO RECOVERY ROOM	35°C

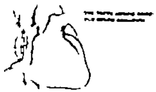
TOTAL CIRCULATORY OCCLUSION AT 26°C

1



B P MEAN 65
HEART RATE 50
ECG NORM SINUS RHYTHM

2

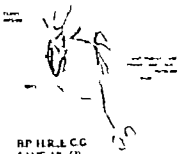


BP HR ECG
SAME AS (1)

3

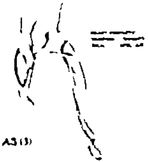
BP 0 TO 10
RATE 30
ECG OCCASIONAL EXTRASYSTOLE
AURICULAR FIBRILLATION

4



BP HR ECG
SAME AS (3)

5



SAME AS (3)

6

BP 65
RATE 40
ECG NORM SINUS RHYTHM

THE TEAM

SURGEON	CARDIOLOGIST
FIRST ASSISTANT	SCRUB NURSE
SECOND ASSISTANT	CIRCULATING NURSE
	CHEMISTRY TECHNICIAN

THE EQUIPMENT

BATH TUB	
	ELECTRO RECORDER

OPEN HEART PROCEDURES

CURRENT SAFE INDICATIONS

1. CONGENITAL HEART DISEASE
2. RIGHT HEART APPROACH
3. CIRCULATORY OCCLUSION NOT OVER 8 MINUTES
4. TEMPERATURE NOT LOWER THAN 26 C

CLOSED HEART PROCEDURES

CURRENT INDICATIONS

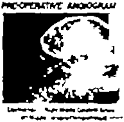
1. DEEP CYANOSIS
   - TETRALOGY
   - TRICUSPID ATRESIA
   - TRILOGY
2. SEVERE TACHYCARDIA
   - ATYPICAL PATENT DUCTUS
   - AORTIC-PULMONARY WINDOW
   - ABERRANT PULMONARY VEINS
3. POSSIBLE NEED FOR INFLOW OCC
   - AORTIC STENOSIS
   - TRICUSPID STENOSIS

EXCISION THROMBUS MIDDLE CEREBRAL

HISTORY

47 YEAR OLD MAN. SUDDEN ONSET ...
HEMIPLEGIA 9/15/54 ANGIOGRAM 10/6/54
COMPLETE OCCLUSION RIGHT MIDDLE CEREBRAL ...
THROMBECTOMY 10/12/54 RECOVERY ALMOST ...

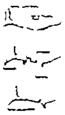
PREOPERATIVE ANGIOGRAM



POST-OPERATIVE ANGIOGRAM

EXPOSURE

FINDINGS & PROCEDURE



OPERATIONS PERFORMED

INTERNAL CAROTID ANEURYSM	ANTERIOR CEREBRAL ANEURYSM
MIDDLE CEREBRAL EMBOLUS	MIDDLE CEREBRAL THROMBUS
ARTERIO-VENOUS ANGIOMA	ANGIOMA OF 4TH. VENTRICLE

RESULTS

A For intra-cardiac visual operations the method is safe and effective if the lesion can be approached through the right heart if temperature is not below 26 C and if circulatory occlusion does not exceed eight minutes.

B For closed cardiac operations regional ischemia, hepato-cellular disease and chronic hypo... in the technique is valuable and appears to lower operative risk.

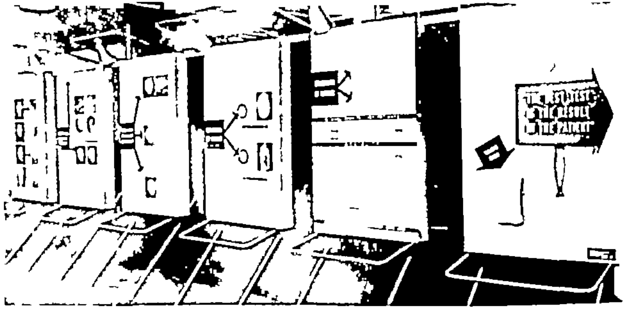
EXPERIMENTAL ...
IN

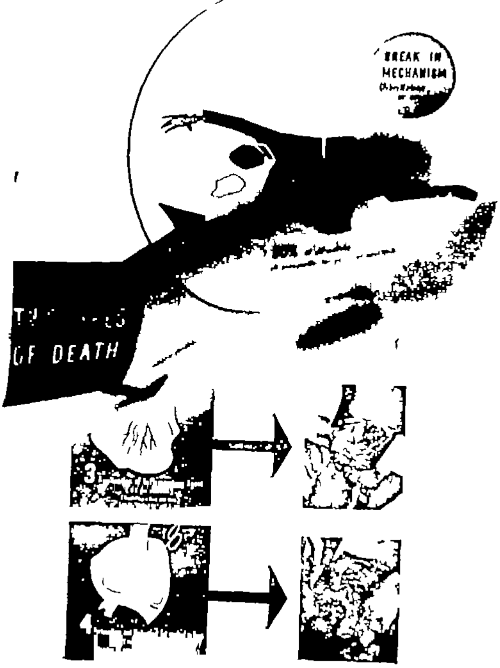
METHOD: TEMPORARY ...
OCCLUSION
CEPHALIC & ...
ARTERIES AFTER
COLLATERAL CHANNELS
LIGATED
RESULTS NORMOTHERMIA
SURVIVAL UP TO 15 MIN
HYPOTHERMIA
SURVIVAL UP TO 45 MIN

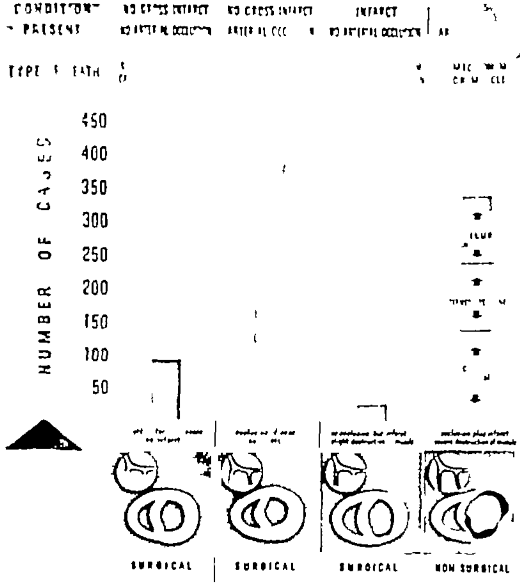
Operations for Coronary Artery Disease.

Claude S Beck and David S. Leighninger, University Hospitals, Cleveland.

This exhibit is based upon 23 years experience in the laboratory and operating room dealing directly with the coronary arteries. There are two causes of death due to coronary artery disease a break in mechanism, and myocardial failure. Over 90% of all victims of coronary artery disease die from a break in mechanism. These patients could be helped by operation provided the operation was done before the break in mechanism occurred. Surgical methods for aiding the crippled coronary circulation are presented. Measurements of several surgical procedures are presented. The selection of patients, clinical results, and mortality are presented. Over 250 patients have been operated upon. About 80% of the patients received an excellent or good result. Patients will be presented.



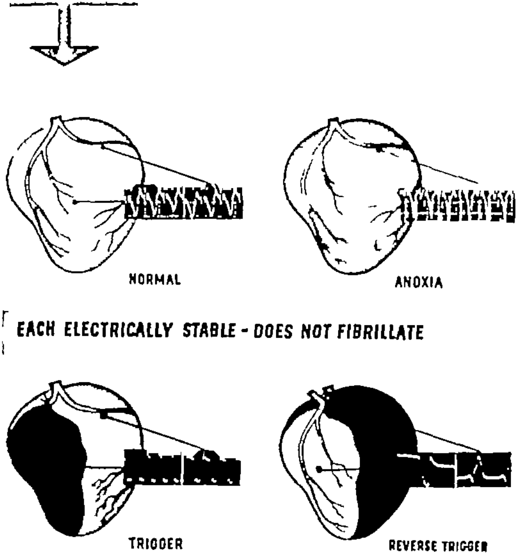

BREAK IN
MECHANISM
DEATH



PATHOLOGY IN CORONARY ARTERY DISEASE

Analyses of 950 Victims

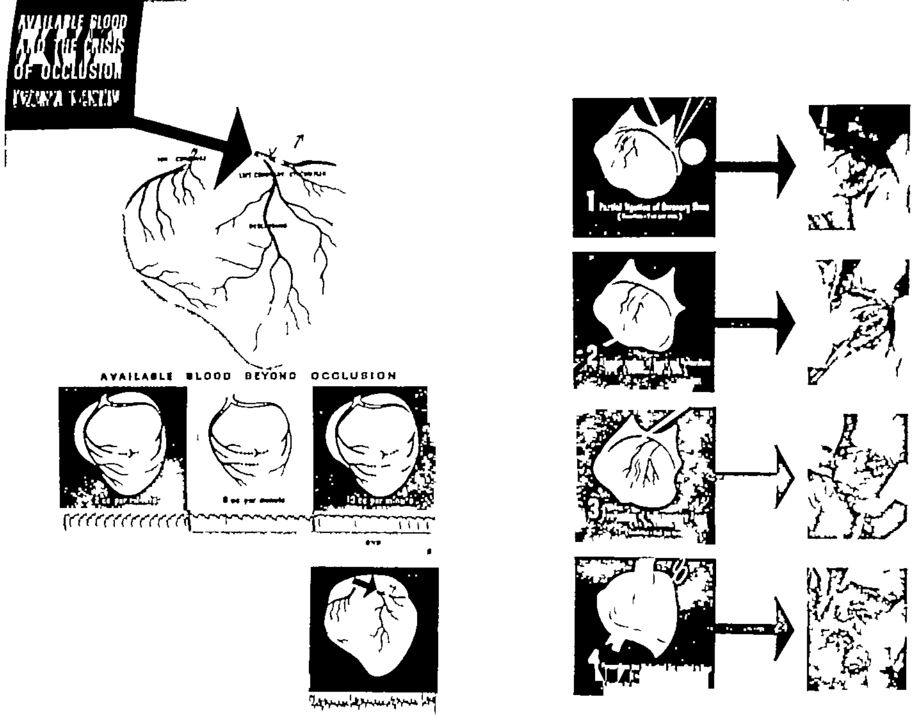
ELECTRICAL STABILITY OF HEART

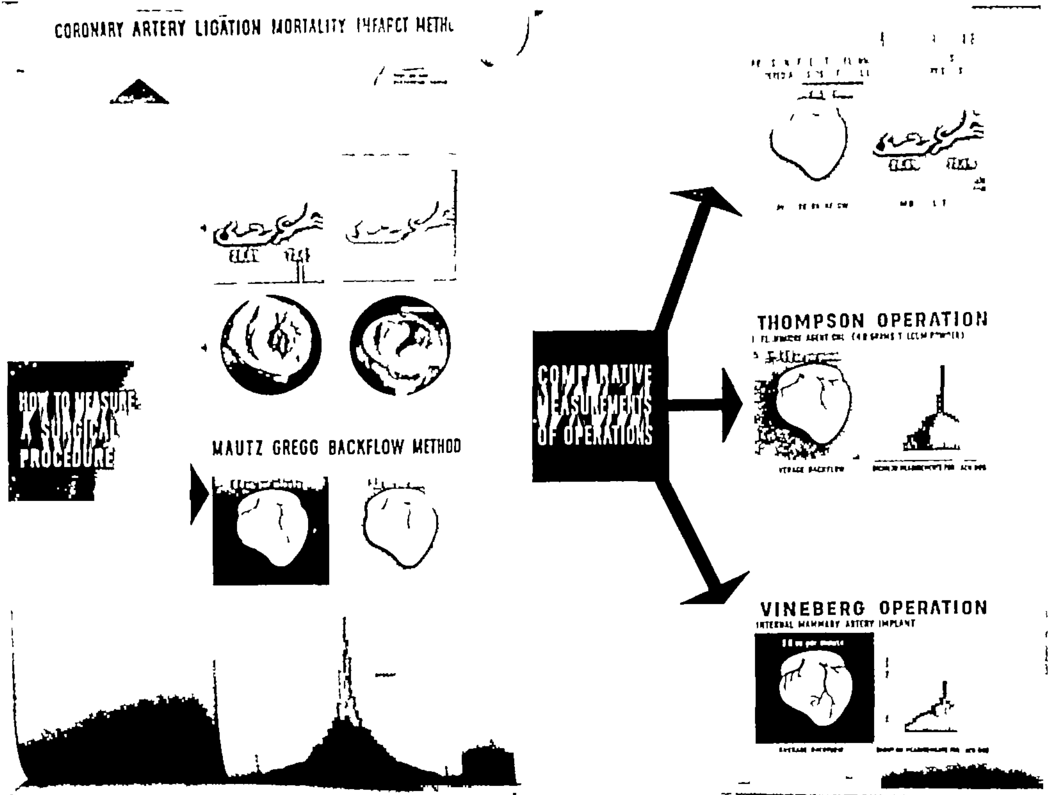


Electrical instability due to oxygen differential—not current of injury

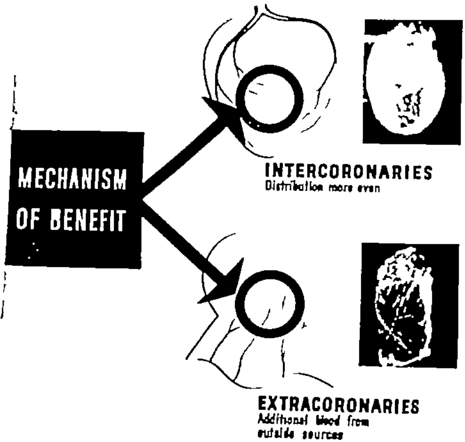
EACH ELECTRICALLY UNSTABLE → VENTRICULAR FIBRILLATION → DEATH

One third of all victims die of this instability without infarction


AVAILABLE BLOOD AND THE CRISIS OF OCCLUSION
AVAILABLE BLOOD BEYOND OCCLUSION
0 cc per minute
10 cc per minute



CORONARY ARTERY LIGATION MORTALITY
HOW TO MEASURE A SURGICAL PROCEDURE
MAUTZ GREGG BACKFLOW METHOD
COMPARATIVE MEASUREMENTS OF OPERATIONS
THOMPSON OPERATION
VINEBERG OPERATION
INTERNAL MAMMARY ARTERY IMPLANT



SELECTION OF PATIENTS

INDICATIONS
Positive diagnosis of coronary disease made by medical cardiologist

CONTRAINDICATIONS
1 Myocardial Failure
2. Recent Infarction

CLINICAL RESULTS [illegible]

6 months ... more postoperative ... could be evaluated

PAIN	NO PAIN 48% LESS P[illegible] IN 48%	TOTAL 90
WORK	BETTER ABLE TO WORK NO [illegible] 35% BETTER ABLE TO WORK [illegible] 65%	TOTAL 90

[illegible]

JANUARY 1 1954 TO MAY 6 1955 - TOTAL PATIENTS 75

Th[illegible] lone ... 2 pat[illegible] 2.6
Ope[illegible]tive and early postoperative 3 patients 4 0 — TOTAL 6 6

[illegible]

That ... [illegible]
It is difficult to prove th... [illegible] ... trend has been established

LATE MORTALITY SUBSEQUENT TO DISCHARGE ALL CASES 1935 TO JUNE 1954

136 patients	from discharge up to one year	9 deaths 6 6	
83 patients	from one year up to two years	4 deaths 4 8	TOTAL 11 4

MORTALITY IN PATIENTS TREATED SURGICALLY

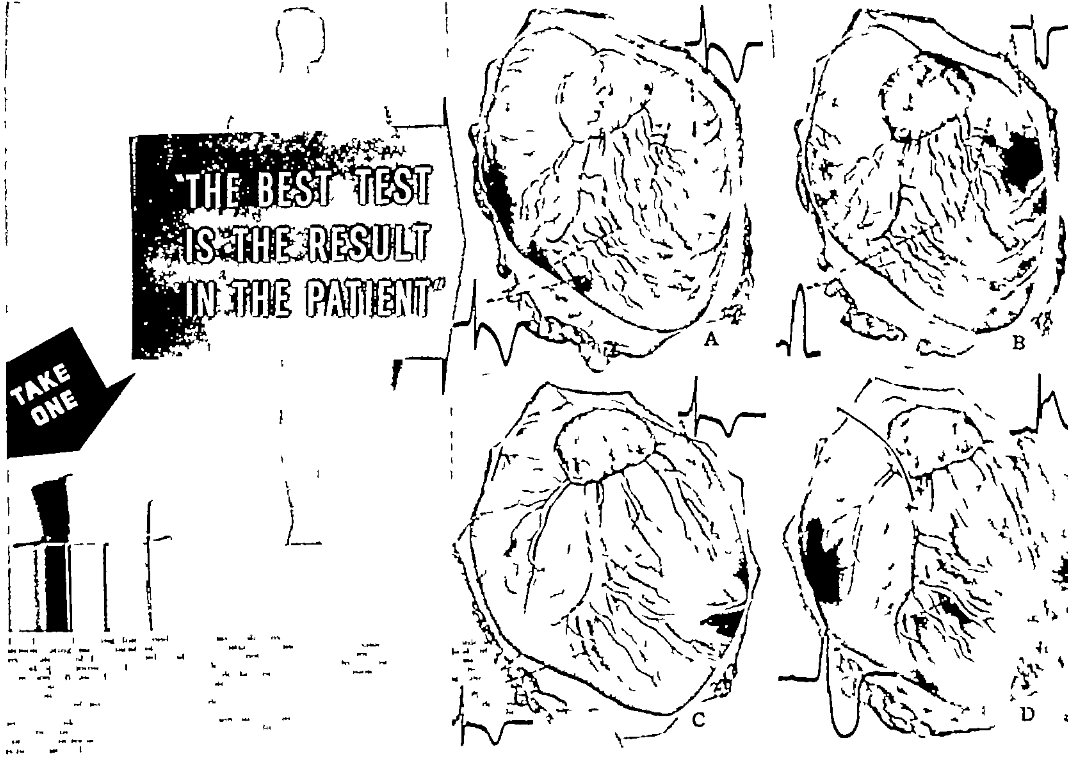
Operative	6 6	
During first year	6 6	
During second year	4 8	TOTAL 18 0

MORTALITY IN 88 COMPARABLE PATIENTS TREATED MEDICALLY (Lindgren)

During first year	15 deaths	17	
During second year	11 deaths	13	TOTAL 30

[illegible]

[illegible]


"THE BEST TEST IS THE RESULT IN THE PATIENT"
TAKE ONE
A
B
C
D

Carcinoma of the Lung.

HERBERT D ADAMS, DAVID P BOYD, and CARLTON R. SOUDERS, the Lahey Clinic, Boston.

The exhibit shows general statistical data elicited from a detailed study of over 400 cases of bronchogenic carcinoma. Causes of delay in diagnosis and treatment are stressed. Surgical specimens emphasize diagnosis and pathological consideration and especially the differential diagnosis of lesions confused with cancer of the lung. Therapy includes various types of surgical operations, as well as the application of 2 million volt x-ray therapy

INCIDENCE AND DIAGNOSIS

CLINICAL DIAGNOSIS AND ETIOLOGY

MORTALITY—CANCER OF THE LUNG

MALES

Number of Deaths

	MASS.	U.S.
1937	192	3,464
1952	728	17,821

ALL CASES—UNITED STATES

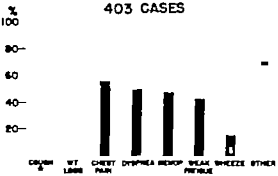
Number of Deaths

1920	956
1952	21,582

THUS, THE INCIDENCE OF CANCER OF THE LUNG TODAY IS ABOUT 23 TIMES THE INCIDENCE 32 YEARS AGO

SYMPTOMS

403 CASES



SMOKING

403 CASES

OF 374 PATIENTS ASKED—

82.6%	17.4%
SMOKED	DID NOT

OF 30 PATIENTS NOT ASKED—
5 WERE WOMEN

OF 64 PATIENTS WHO DID NOT SMOKE—
38 WERE WOMEN

CANCER OF THE LUNG
AGE AND SEX DISTRIBUTION

AGE

Decade	No.	%
30-40	11	2.7
41 50	58	14.3
51 60	177	43.9
61 70	130	32.3
71 80	25	6.2
80 YRS.	2	0.4

RANGE. 30 TO 80 YEARS
MEAN AGE. 57 YEARS

SEX

MALES	350
FEMALES	53

RATIO: 6.6 MALES TO 1 FEMALE

IN MALES, PRIMARY CARCINOMA OF THE LUNG IS NOW A LEADING CAUSE OF DEATH

RESULTS

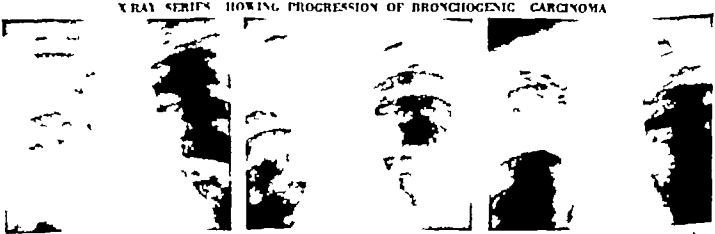
OF DIAGNOSTIC PROCEDURES

	CASES	%
BRONCHOSCOPY	312	77.4 OF 403 CASES
CLINICALLY POSITIVE	193	61.8 OF 312 CASES
BIOPSY	184	
POSITIVE	132	42.3 OF 312 CASES
PAPANICOLAOU SMEAR	117	
POSITIVE	59	50.4 OF 117 CASES
X RAY POSITIVE	364	90.3 OF 403 CASES

Bronchoscopic localization and site of biopsy

Papanicolaou of sputum showing tumor cells.

X RAY SERIES SHOWING PROGRESSION OF BRONCHIOGENIC CARCINOMA



First ray normal ... lesion right upper lobe

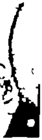
Fifteen months. Lesion considerably larger

Seventeen months. Lesion larger with beginning atelectasis, right upper lobe

Nineteen months. Increasing atelectasis and pneumonitis, right upper lobe.

Twenty-five months. Complete atelectasis of right upper lobe with shift of trachea.

ligament divided
ry el isolated.



ship of

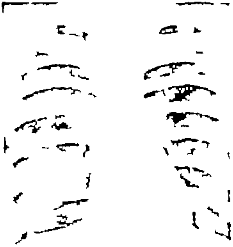
Twenty-seven months. Gross specimen of resected right lung.

Bronchial adenoma i same patient demonstrating lue of routine lateral film.

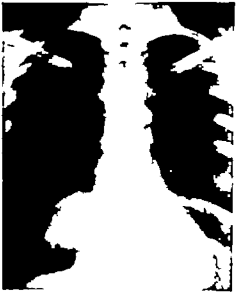
Bronchial adenoma in same patient showing propagati g smooth tumor mass.

Bronchogenic carcinoma simulating grossly bronchial adenoma.

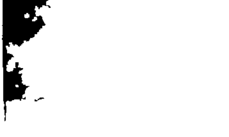
BENIGN TUMORS AND SARCOMA
CHRONIC PNEUMONITIS AND DIFFUSE MILIARY DISEASE



T mor mass of right lung—proven ha martoma by operation.



T mor mass of ight l g—proven fibrosarcoma by operation.



Tumor mass of [illegible] proven [illegible] pneumonitis by oper [illegible]

Diffuse miliary disease of the lungs Inflammatory or malignant?

Same patient. Diffuse metastatic ca cinoma.

SURGICAL TREATMENT

PNEUMONECTOMY NORMAL HILAR DISSECTION

Pulmonary artery isolated.

Pulmonary rtery ligated and di ided. Superior pulmonary ein isolated.

Inferior pulmonary ligament II ided and inferior pulmonary ei isolated.

Bronchial rteries isolated nd di ided

M I bronchus being divided and closed.

Lung removed showing relationship of divided hilar structures.

PNEUMONECTOMY; RADICAL INTRAPERICARDIAL RESECTION

Carcinoma involving lef pulmonary artery Pericardium opened exposing main pulmonary rtery and bifurcation.

Pericardium open – ligatures placed around pulmonary artery and superior pulmonary vein.

Left pulmonary rtery I I furcation of main pul Right pulmonary artery

I ferior pulmonary vein ligated and main bronchus cleared

Main bronchus being divided and proximal end being closed with interrupted sutures.

Lung removed, vessels ligated intrapericardially bronchus closed.

RESULTS OF SURGICAL TREATMENT

RESECTABILITY
403 CASES

	CASES	%
RESECTED	104	25.8% OF 403 CASES
CURATIVE	96	23.8% OF 403 CASES OR 92.3% OF 104 CASES
PALLIATIVE	8	7 7% OF 104 CASES

MORTALITY
217 CASES OPERATED

	DEATHS NUMBER	DEATHS %
RESECTED CASES (104)		
PNEUMONECTOMY	8	76
LOBECTOMY	0	—
THORACOTOMY ONLY (113)	9	8.6

TOTAL MORTALITY 7.8% (17 PATIENTS) OF THOSE OPERATED ON

PATHOLOGY OF 15 PATIENTS LIVING 5 YEARS

	CASES
EPIDERMOID CARCINOMA	
GRADE III	6
GRADE II	1
GRADE I	1
ADENOCARCINOMA	3
UNDIFFERENTIATED CARCINOMA	2
CARCINOMA SIMPLEX	1
NOT STATED	1

COMBINED TREATMENT USED IN TWO GROUPS

GROUP I PALLIATIVE RESECTION

- INTRAPERICARDIAL PNE MONECTOMIES
- RAD CAL PNEUMONECTOMIES (EXTENSIVE MET S SES TO EDIAST NAL PH NODES

FOLLOWED BY

- 2 MILLION VOLT DI TION THERAPY (6000) IN 36 TRE T E DAYS

GROUP II INOPERABLE

- 2 MI LLIO VOLT RADIATIO THERAPY (6000) IN 35 TRE T E T D YS

FOLLOWED IN 10 WEEKS BY

- RE-EVALUATION
- BRONCHOSCOPY
- RESECTION

(A) Group I Radical resection. Small lesion with extend metastases t me diastinal lymph nodes (B) Lung of same patient. Small primary lesion with large peribronchial cancerou nodes.

(A) Group II Inoperable broncho genic carcinoma of right lung w th extensive direct invasion of mediastinum. (B) Same patient 10 week after 2 million vol radiation therapy Complet clearing of mediastinal density Pneumonectomy done t this time. (C) Lung of same patient. No viable carcinoma in extensive peribronchial lesion made resectable by super oltage therapy

Upper lobe lesion nd mediastinal ra eaction

Pulmonary rter and superior el Isolated

Ligatio and t nsection of pulmonary rtery Superior ei divided.

I erior pulmonary I

D sion nd sut of l nchus

Hila tru divided (mplet)

Summary of al

A IALYSIS OF OPERATIVE TREATMENT

TY B ED ON 403 CASES

S BED ON

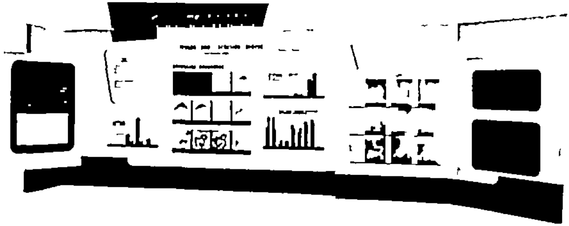
TO 1948

PALLIATIVE RESECTION PLUS
2 MILLION VOLT RADIATION THERAPY
14 CASES

GROUP I — Cases

GROUP II

CONCLU ON



Partial Gastrectomy With or Without Vagus Resection for Duodenal or Marginal Ulcer

Louis T Palumbo Theodore T Mazur, and Bernard J Doyle, Veterans Administration Center Des Moines Iowa.

This exhibit presents indications and the percentage of patients with duodenal ulcer receiving surgery The incision and basic technique employed in a series of about 250 cases is portrayed by colored transparencies. The morbidity and mortality rates are graphically compared in both groups, as are also the various factors in an over-all evaluation. Comparative studies of the changes in gastrointestinal motor functions are shown by roentgenographic transparencies. The final results in both groups are shown, and the policy adopted for the selection of patients for the combined operation of partial gastrectomy and vagus resection is presented.

During the past ten years changing concepts of which surgical procedures afford the ulcer patient the best over-all results have stimulated interest in various operations. The consensus favors partial gastrectomy as offering the best chance for improvement.

Since the introduction of "Vagotomy" in 1944, vagus resection has been and is considered by many surgeons an adjunct procedure to other gastric operations.

Accordingly, the results of 189 partial gastrectomies and 42 combined partial gastrectomy and bilateral vagus resections are herein tabulated and compared.

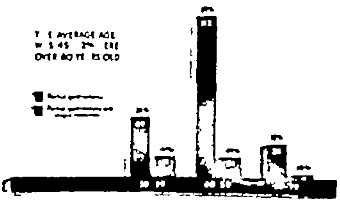
Partial gastrectomy with an antecolic gastrojejunostomy with a short afferent jejunal loop was the operation of choice

Partial gastrectomy with vagus resection was considered preferable in patients with autonomic nervous system instability and a higher cephalic phase of gastric secretory function

One or more of these complications is a strong indication for surgical intervention

Pyloric obstruction *Intractability*
Recurrent bleeding *Recurrent disability*
Massive hemorrhage *Perforation*
Inability to follow medical regimen

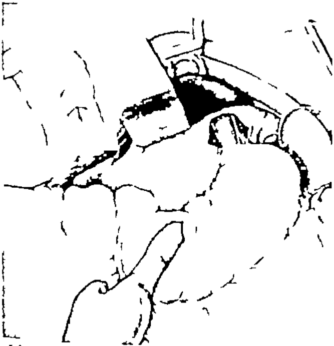
Surgical treatment was indicated in 15% of the duodenal ulcer cases Marginal ulcer is regarded as an absolute indication



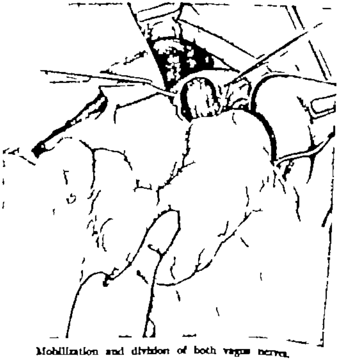
OPERATIVE PROCEDURE

The basic steps of both procedures are portrayed. Vagus resection is performed first followed by a high partial gastrectomy. Adequate [illegible] both procedures is provided by a transverse, elliptical supraumbilical incision.

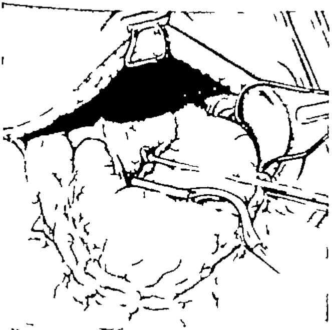
Transverse division of anterior rectus sheath and rectus abdominis muscle



Infradiaphragmatic portion of vagus nerves localized after division of peritoneum over esophageal hiatus.

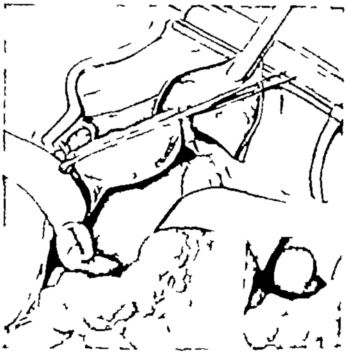


Mobilization and division of both vagus nerves.

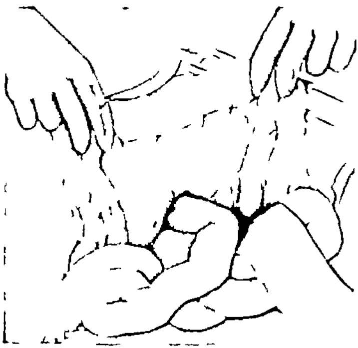


Mobilization of distal three fourths of stomach, gastric clamps applied.

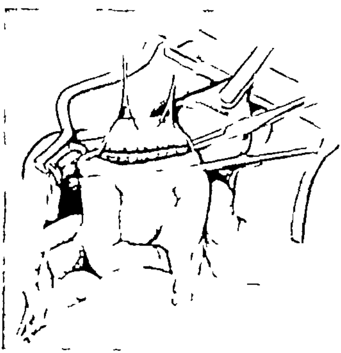
Stomach transected first part of duodenum with ulcer dissected off pancreas



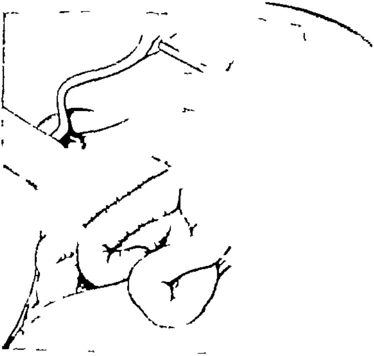
V rious steps in losure of duodenal stump.



Method 1b lizing ligament of Treitz and first part of jejunum

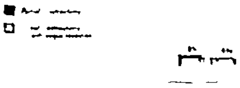


Posterior row of anterior gastrojejunostomy completed Aff ferent jejunal limb.

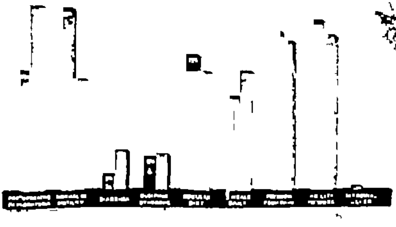


Completion of anterior gastrojejunostomy Afferent nd cf limb adequately anchored.

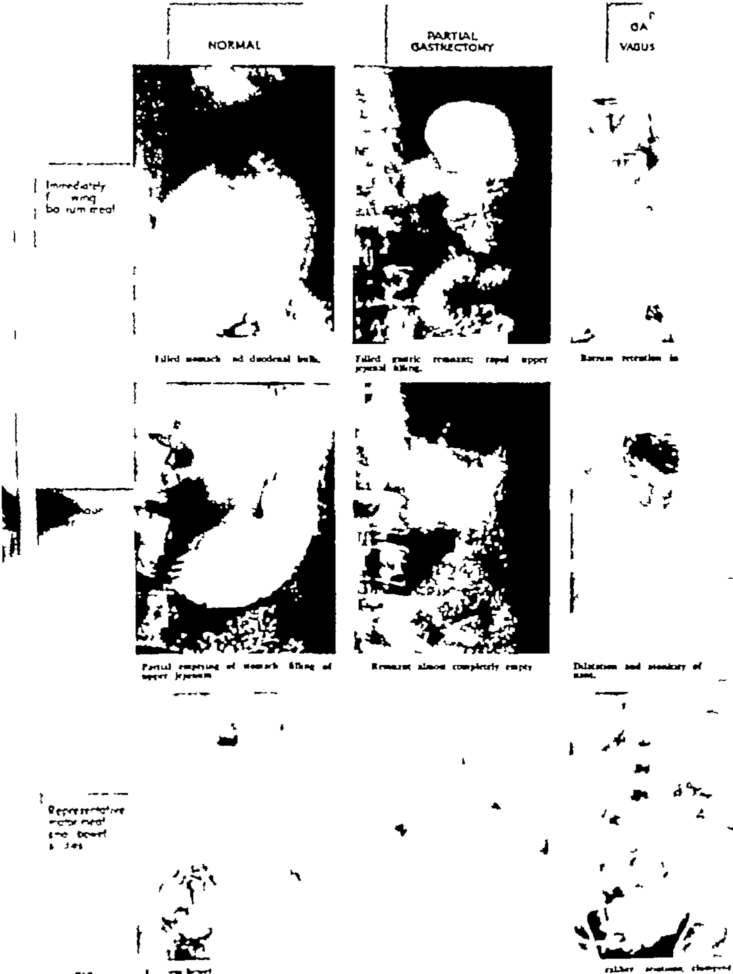
THE ADDITION OF VAGUS RESECT
DID NOT INCREASE THE MORTALITY
RATE BUT DID MATERIALLY INCREASE
THE INCIDE CE OF CO PLICATIONS



IN THE OVER-ALL EVALUATION THESE
ARE IMPORTANT CONSIDERATIONS



Comparative GI barium contrast studies reveal interference with motor power and in configurations of stomach and small bowel



Filled stomach nd duodenal bulb.

Filled gastric remnant; rapid upper jejunal filling.

Barium retention in

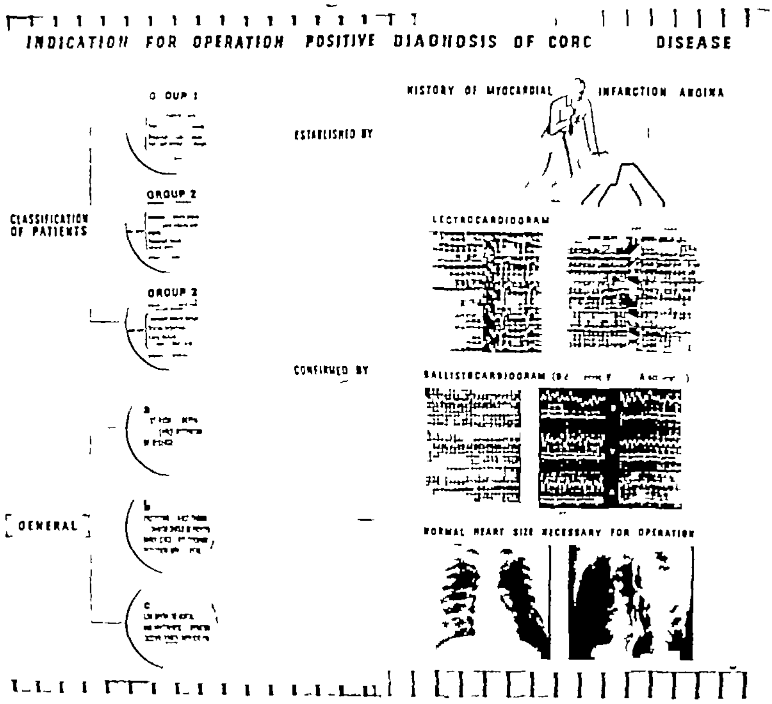
Partial emptying of stomach filling of upper jejunum

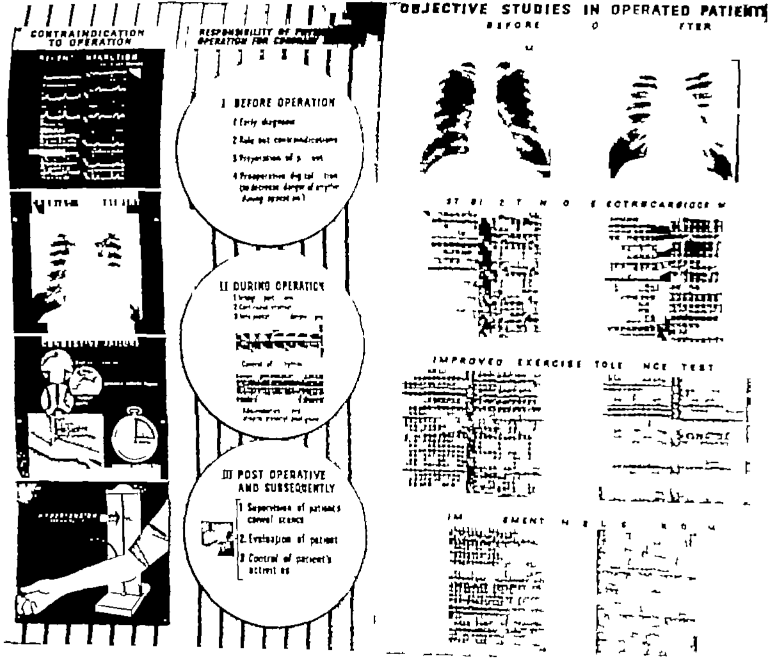
Remnant almost completely empty

Dilatation and atonicity of

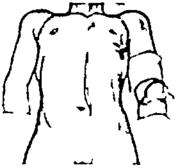
Results were considered excellent or good in [illegible]9% of the gastrectomy cases; [illegible]0% in the combined procedure group.

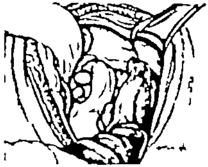
The extremely low incidence of marginal ulcer in the partial gastrectomy series is worthy of note.

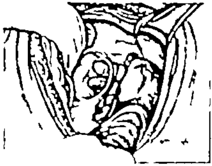

INDICATION FOR OPERATION POSITIVE DIAGNOSIS OF CORC DISEASE
CLASSIFICATION OF PATIENTS
GROUP 1
GROUP 2
GROUP 3
GENERAL
a
b
c
ESTABLISHED BY
CONFIRMED BY
HISTORY OF MYOCARDIAL INFARCTION ANGINA
LECTROCARDIOGRAM
BALLISTOCARDIOGRAM
NORMAL HEART SIZE NECESSARY FOR OPERATION

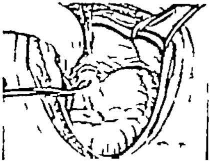


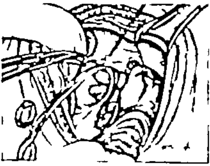
CONTRAINDICATION TO OPERATION
I BEFORE OPERATION
2 Rule out contraindications
II DURING OPERATION
III POST OPERATIVE AND SUBSEQUENTLY
2 Evaluation of patient
OBJECTIVE STUDIES IN OPERATED PATIENTS
BEFORE
IMPROVED EXERCISE TOLE NCE TEST

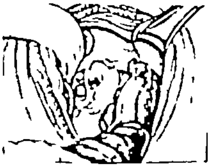








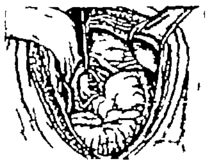




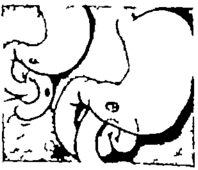
EXPOSING POSTERIOR VAGUS NERVE

RESECTING POSTERIOR VAGUS NERVE

ESOPHAGUS DISSECTED FREE OF [illegible] NERVE [illegible]

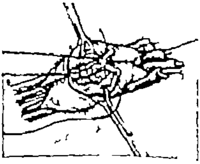


[illegible] PYLOROPLASTY

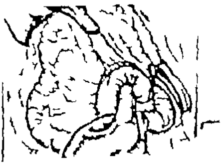


POSITION OF GASTROENTEROSTOMY

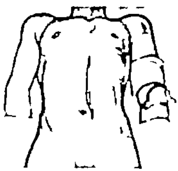
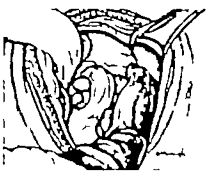
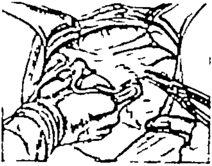
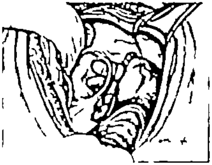
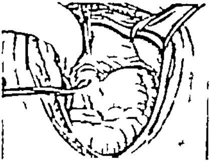
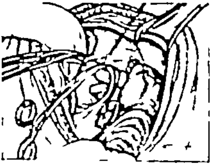
SHORT AFFERENT LOOP

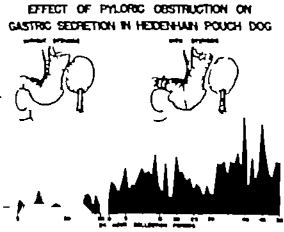


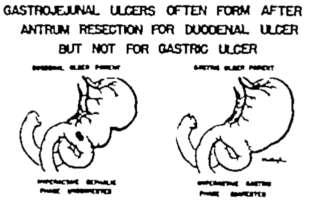
CLOSING GASTROENTEROSTOMY

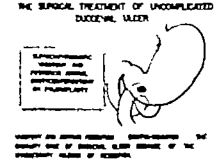


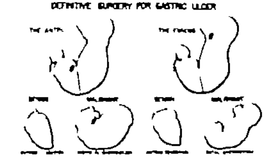
[illegible] SIZE OF STOMA

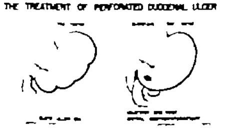







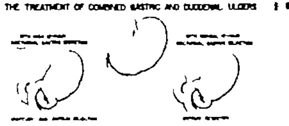

EFFECT OF PYLORIC OBSTRUCTION ON
GASTRIC SECRETION IN HEIDENHAIN POUCH DOG

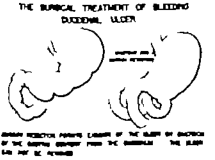

GASTROJEJUNAL ULCERS OFTEN FORM AFTER
ANTRUM RESECTION FOR DUODENAL ULCER
BUT NOT FOR GASTRIC ULCER

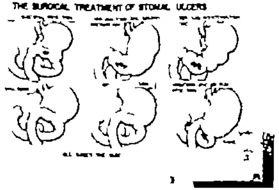

THE SURGICAL TREATMENT OF UNCOMPLICATED
DUODENAL ULCER


DEFINITIVE SURGERY FOR GASTRIC ULCER

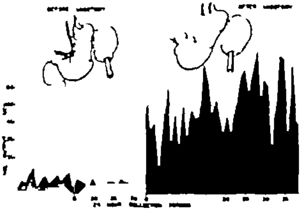

THE TREATMENT OF PERFORATED DUODENAL ULCER


THE TREATMENT OF COMBINED GASTRIC AND DUODENAL ULCERS

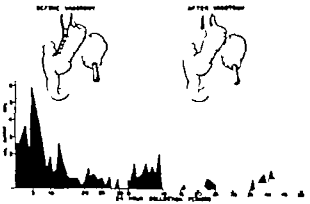

THE SURGICAL TREATMENT OF BLEEDING
DUODENAL ULCER


THE SURGICAL TREATMENT OF STOMAL ULCERS

EFFECT OF VAGOTOMY ON GASTRIC SECRETION IN HEIDENHAIN POUCH DOG



EFFECT OF VAGOTOMY ON GASTRIC SECRETION IN HEIDENHAIN POUCH DOG WITH ANTRUM RESECTED



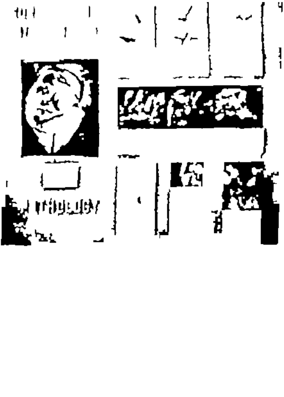
GASTRIC EMPTYING TEST MEAL

Cardiac Surgery: Recent Improvements in Technique.

CHARLES P BAILEY HOUCK E. BOLTON WILLIAM L. JAMISON, and HENRY T NICHOLS, Hahnemann Medical College and Hospital and Bailey Thoracic Clinic, Philadelphia.

As our experience has increased with cardiac surgery numerous improvements in the surgical technique for such patients ha been developed Mitral commissurotomy for mitral stenosis is not adequately performed if the subvalvular structures are not explored and any obstruction corrected. Aortic stenosis was previously corrected by a transventricular approach. There are certain cases where this is not applicable, and an approach through the aorta has been developed. The simultaneous correction of multiple valvular lesions is now being performed. Pulmonary valvular stenosis as well as infundibular stenosis can now be corrected with greater facility by recently developed instruments. The results of these alterations in technique are presented. Approximately 1,500 such cases operated upon are evaluated.

Severe m ral stenosis h extensi h ken ing of h leaflets and fusion of he commissures The size of he lvular orifice may be compared ith ha of the adjacent hemostat tip



Cancer of the Larynx.

HAYES E. MARTIN, OLIVER S. MOORE, and JAMES HELSPER, Memorial Hospital, New York.

The exhibit presents a definition of the anatomic forms of cancer of the larynx (intrinsic and extrinsic). The techniques of treatment by radiation (dosage in successful cases) and surgery are shown. Surgical techniques are partial laryngectomy, total laryngectomy, and total laryngectomy combined with neck dissection. Colored transparencies of excised larynges are shown, illustrating the types and extent of lesions which have been excised, including a number with the attached tissues of the neck dissection. Net five-year end-results are given separately for cancer of the extrinsic larynx and for cancer of the intrinsic larynx. These figures are further broken down into the comparative end-results according to the method of treatment, surgery and radiation.

Exploration and Reconstruction of the Common Bile Duct.

JOHN L. MADDEN, WILLIAM J. MCCANN, and JOHN M. LORE, JR., St. Clare's Hospital, New York.

In the belief that internal splint supports or stents are foreign bodies that produce an undesirable tissue reaction, the necessity of their continued use in reconstructive surgery of the common duct is questioned. The exhibit demonstrates the technique and incidence of exploration of the common duct and the results of both a clinical and experimental study of the effectiveness of primary reconstruction of the common duct without the use of stent supports. The results of this study question the necessity of stents or prolonged catheter drainage in reconstruction of the common duct.

Gastric Diverticula.

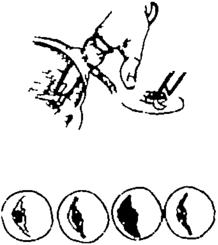
DONALD M. CLOUGH and HENRY M. PERRY, Guthrie Clinic, Sayre, Pa.

The exhibit describes gastric diverticula and emphasizes their significance by describing the incidence, occurrence, etiology, signs, symptoms, diagnosis, and differential diagnosis. The condition can be disabling, and many patients in the past have been denied definitive treatment for this because of the technical difficulties in their surgical removal. A step-by-step technique for their surgical removal—simplified by employing a transthoracic approach—is portrayed. Typical cases, together with roentgenograms and results, are presented.

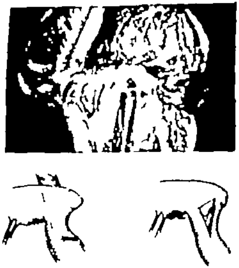
Efficacy of Preoperative Intestinal Preparation with Single and Combined Use of Antibiotics.

MAX B. MILBERG, EDWARD A. KANENSON, FELIX LEUCKOWICZ, and JESSE JAMPOL, Maimonides Hospital of Brooklyn, Brooklyn, N. Y.

The exhibit demonstrates a simplified rapid screening method of the intestinal flora and micro-organism, antibiotic sensitivities in mixed culture. This technique was employed in studying the intestinal flora before and after preparation of the individual patients with single and combined use of antibiotics. Further comparative study was made in the postoperative course of patients.

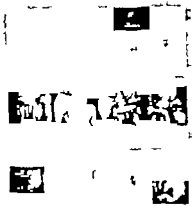


Upper approach to mitral valve through left uricular appendage, using guillotine knife for commissurotomy Lower stenotic mitral valve showing incision of ntero-lateral and posteromedial commissure, open and closed.

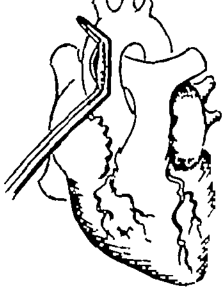


Upper entricula aspect of severe sub-valvular stenosis fusion and almost com plete obliteration of chordae tendineae Lower papillotome incision of papillary muscle to obliterat subvalv la stenosis.

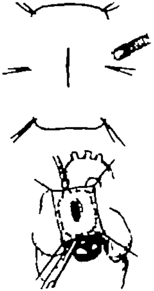
Photograph demonstrating use of papillotome to incise papillary muscle, nd subsequent extension of incision ith finger tip



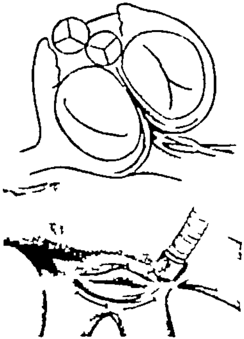
Rheumatic aortic val lar stenosis. The aortic valve is seen from the aortic side. There is marked stenosis and calcification of valve cusps with fusion of cusp edges. The very small openi g is triangular in shape.



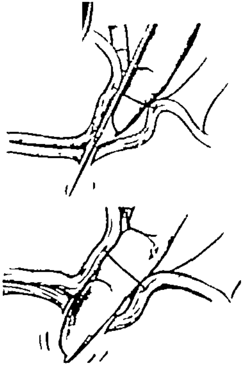
Exclusion clamp applied to right side of ascending aorta. Incision into aorta.



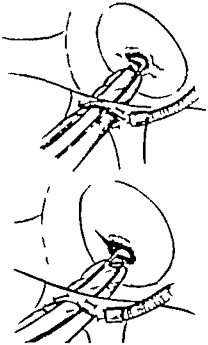
Transaortic approach t aortic ve. Upper pericardi m prepared for use as "pouch") shown incised with purse string in place. Lower "pouch being sutured to incision in segment of ascending aorta where exclusion clamp is applied.



Approach mitral l through light thor Upper trans erse section through la rel onship of position of l es l ision int er tal groov Lower l tera t tal groov incised t junction of light pul mona eins nd right i tium with purse st i g in place



Approach to mitral valv through right thorax. Upper finger in interatrial groov nd incision Lower finger adv nced behind right atri m and through I teratrial sulcus.

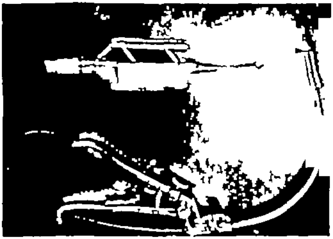


Approach to mitral al through right thorax. Upper guillotine commissurotomy k if passed I t left tri m t stenotic mitral lve Lower nterolateral commissure l ised d pp ach to post medi l commissure.

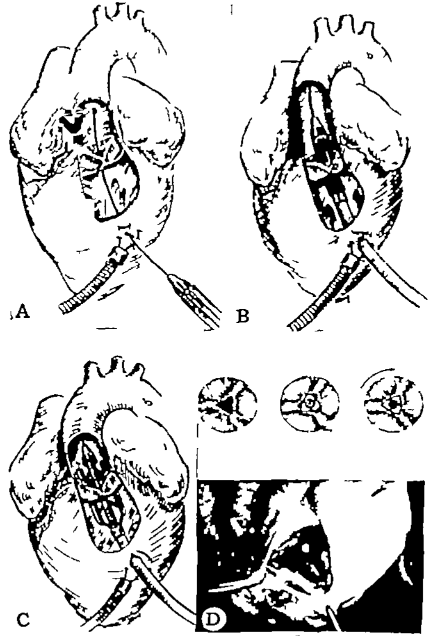
E posure of site of incision at junction d pulmonary eins and right at um for he right sided ppr ach to mitral lve

Tip of lef index finger in plane of dissection of interatrial groove. K if inserted long finger ex end ncl ion into he left atrium.

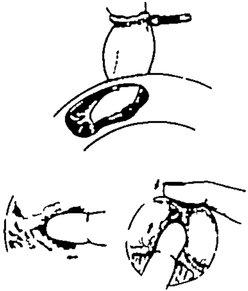
Purse st ing ightened f er emoval of finger from left trium h conclusion of definitiv surgery



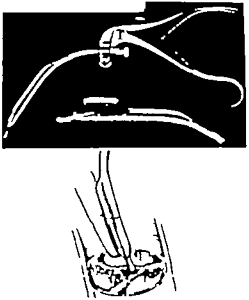
Transventricula approach t stenotic aortic al e. Bailey aortic dilator ith guide wire nd tri radiate dilating head.



Transventricula pproach stenotic aortic alv A purse string in wall of left en ricle with g ld w d d through stenotic aortic h B dil g h d d d through h orifice C dilator expanded separating he fused commissures. D pper instru ment head in position rotating to conform with commissures. lower aortic dilator expanded to separat fused commissures, viewed from aortic side



Uppe left h k finger l pouch pproach ing aortic l l ow d git l j su pplied l line of ommisu l u er p es t pplied externally



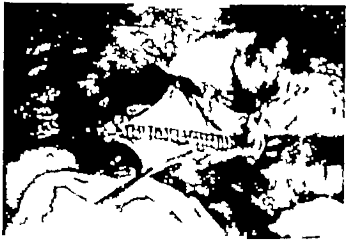
T nsaortic pp oach t aortic l Upper inst ment for dilating the aort l f om box with bars ont acted nd panded Low aortic l lator ach nei g t d steno ic l guided by left index finger

T nsa rt pp ach to aortic l Uppe inst ent l or be bars expanded sepa g f sed ommisu es Lower gr lk ne ommisu otomy k lf sed t nose mmisu esst nt t sepa t an h a ic dila

E hn on lamp pplied he left side of the ns ing a t w h pe dial p u h sut ed to edge t inc sed aorta

L ft inde fi ge t d the ac t th ugh per dial p uch l n l mp t k ed k l

A l l se ed lon left les fi ge l g ded l ough a l



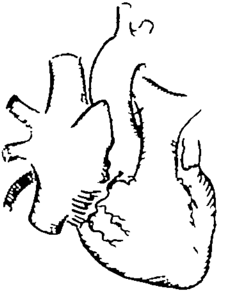
E t ued a ed ne en a su

Righ side pproach t mitral l f on junction of pulmona ens and right trium

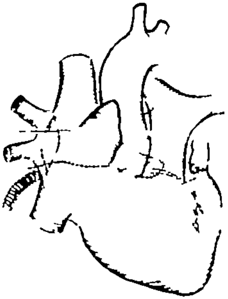
Incision into Intera rial gr l h purse string in position. Righ ium retrac ed up

Right-side approach t aortic al from asc l ng aort F linlon clamp applied.

Approach tricuspid h Index finger l right trial p- pendage

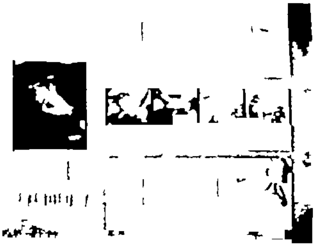


Anterior iew of heart, showing relation of ascending aorta, right trial appendage, site of junction of right pulmonary eins and posterior aspect of right trium.

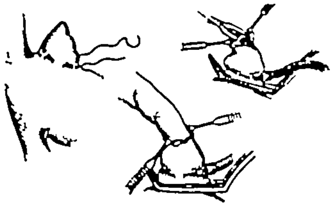


Lef index finger through interatrial groo int left atrium, pproaching mi ral l

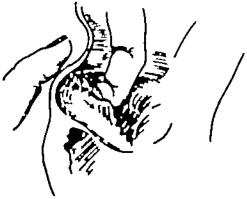
wing position of finger ppr h l relation to approach valve.



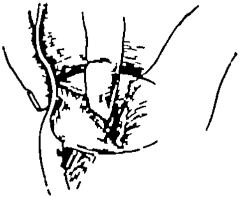
Rheumatic tricuspid valvular stenosis. Diamond shaped, stenotic fibrotic tricuspid valve viewed from the atrial aspect. Fusion of the edges of the cusps and almost complete obliteration of the commissures.



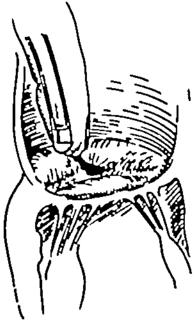
Approach to the tricuspid. Purse string in position. Clamp applied, division of obstructing trabeculae and exploring finger inserted.



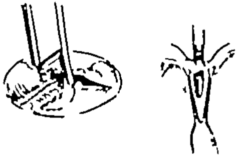
Digital separation of fused commissures of stenotic tricuspid with external counter pressure.



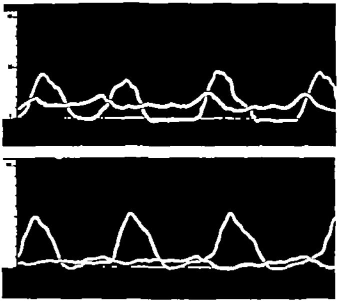
Digital pressure from central aspect is employed when lateral pressure does not separate fused cusp edges.



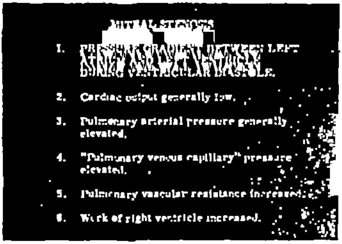
Guillotine ... guided into ... orifice by left index finger.

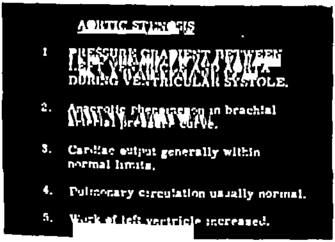


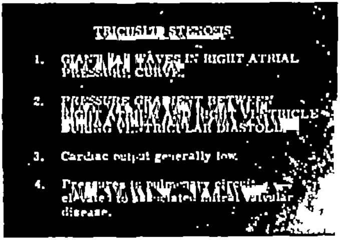
Oblique view of guillotine knife in cutting position ... lateral ...

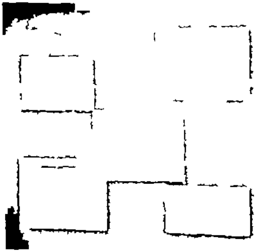


Above, preoperatih right heart catheterization I tricuspid stenosis.
Below, postoperatih right heart catheterization I tricuspid stenosis.









(LONGEST FOLLOW-UP — YEARS)

MITRAL COMMISSUROTOMY	[illegible] cases
OPERATIVE DEATHS	[illegible] — % (Suicide — [illegible])
LATE DEATHS	[illegible] — [illegible] % ([illegible] of these [illegible])
FOLLOW-UP OF SURVIVORS	
IMPROVED	[illegible] — [illegible] %
UNCHANGED	4[illegible] — [illegible] %
WORSE	[illegible] — %

(Unable to follow-up — [illegible])

R SU T O PATI T OPE D

FO I OL T P O TIC T SIS

(TRAN VE ICUL R A RO C)

(FOLLOW-UP — 1 to years)

AORTIC COMMISSUROTOMY	63 cases
OPERATIVE DE THS	16 — 26 %
LATE DE THS	13 — 17 %
FOLLOW UP OF SURVIVOR	
IMPROVED	29 — 81
UNCHANGED	3 — 8 %
WORSE	3 — %

(Unable to follow-up — 3 cases)

RESUL O PATIE TS OPE TED

U O F AOR IC STENOSIS

(TR NSAO TIC APP O CH)

(FOLLOW-UP — 3 to 15 months)

TRANSAORTIC COMMISSUROTOMY	47 cases
OPERATIVE DEATHS	7 — 14 %
LATE DEATHS	8 — 17 %
FOLLOW-UP OF SURVIVORS	
IMPROVED	30 — 91.2 %
UNCHANGED	— 8 %
WORSE	3 — 8 %

S OF PATIEN OPE ED

ON O MIT AL AND AO TIC TE O I

(T I D AP O C)

(FOLLOW-UP months to years)

COMBINED AORTIC AND MITR L COM ISSUROTOMY	87 cases
OPERATIV DE THS	16 — 18 %
LATE DE THS	— %
FOLLOW UP OF SURVIVORS	
IMPROVED	53 — 84 %
UNCH NGED	3 — 5 %
WORSE	3

(Unable to follow-up cases)

EARLY RESULTS OF 12 PATIENTS OPERATED FOR MITRAL STENOSIS-RIGHT SIDE APPROACH (Longest Postop. Interval Months)

	NO. CASES	OF DEATHS
MITRAL COMMISSUROTOMY		
MITRAL COMMISSUROTOMY AND TRICUSPID EXPLORATION	10	
MITRAL COMMISSUROTOMY AND TRICUSPID COMMISSUROTOMY	___	1
TOTAL	12	[illegible]

One of these cases also had R. L. Lobectomy for arterio-venous fistula.

One patient had an interatrial septal defect (with anomalous pulmonary venous drainage) repaired.

One patient had repair of an interatrial septal defect and wedge resection of "pulmonary mass lesion.

Richter's Hernia: Etiology, Recognition, and Treatment.

ROBERT W GILLESPIE, MERLE M. MUSSELMAN, and WAYNE W GLAS, Wayne County General Hospital, Eloise, Mich

Richter's hernia is a deceptive entity with a high mortality that can be reduced by accurate diagnosis and early operation. It is deceptive because strangulation may occur early frequently in the absence of obstructive symptoms. The high mortality associated with this lesion has resulted from misdiagnosis and delayed operation. Criteria for its accurate diagnosis and treatment are presented. These are illustrated by photographs, drawings, and roentgenographs selected from those of a group of 16 patients.

R O P TIENTS O R TED
FOR FO ISOLAT D A TIC STENOSIS
(TRANSVE T IC L PPROAC)
(FOLLOW-UP — 1 to 3 years)

AORTIC COMMISSUROTOMY	[illegible] cases
OPER TIVE DEATHS	[illegible] — [illegible] %
LATE DEATHS	[illegible] — [illegible] %
FOLLOW-UP OF SURVIVORS	
IMPROVED	[illegible] — [illegible] %
UNCHANGED	— [illegible] %
WORSE	[illegible] — [illegible] %

(Unable to follow-up — [illegible] cases)

OF PATI TS O TED
O O MITRAL AO IC ST NOSIS
(T I P O C)
(FOLLOW-UP — months to 3 years)

COMBINED AORTIC ND MITRAL COMMISSUROTOMY	[illegible] cases
OPER TIVE DE THS	[illegible] — [illegible] %
LATE DEATHS	[illegible] — 4. %
FOLLOW UP OF SURVIVORS	
IMPROVE	[illegible] — [illegible] %
UNCH NGED	— [illegible] %
WORSE	[illegible] — %

(Unable to follow-up [illegible] case)

R S LTS O 47 ATIENTS O ATED
UPO O O TIC ST SIS
(TR NS ORTIC A P OAC)
(FOLLOW-UP — to [illegible] months)

TRANSAORTIC COMMISSUROTOMY	47 cases
OPERATIVE DEATHS	[illegible] — [illegible] %
LATE DEATHS	— [illegible] %
FOLLOW-UP OF SURVIVORS	
IMPROVED	[illegible] — [illegible] %
UNCHANGED	[illegible] — %
WORSE	[illegible] — %

EARLY RESULTS OF [illegible] TIENTS OPERATED FOR MITRAL STENOSIS RIGHT SIDE APPROACH ([illegible] Interval [illegible])

	NO. CASES	OF DEATHS
MITRAL COMMISSUROTOMY		
MITRAL COMMISSUROTOMY AND TRICUSPID EXPLORATION	[illegible]	
MITRAL COMMISSUROTOMY AND TRICUSPID COMMISSUROTOMY	[illegible]	[illegible]
TOTAL	[illegible]	[illegible]

One of these cases also had [illegible] for arterio-venous fistula.

One patient had an interatrial septal defect (with [illegible] pulmonary venous drainage) repaired.

One patient had repair of an interatrial septal defect and wedge resection of pulmonary [illegible].

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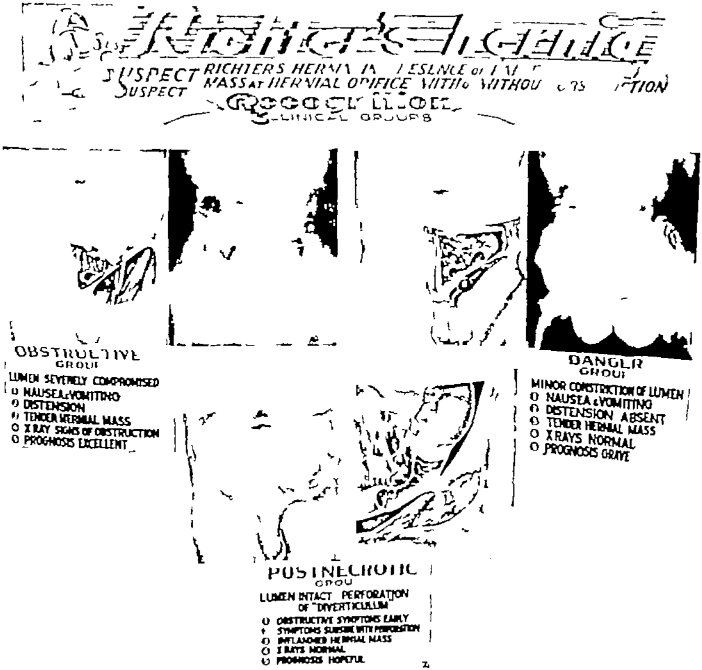


Etiology ..
ORRS THEORY

OBSTRUCTION
BEGINS WITH INCARCERATION, EDEMA AND CONGESTION OF A LOOP OF BOWEL

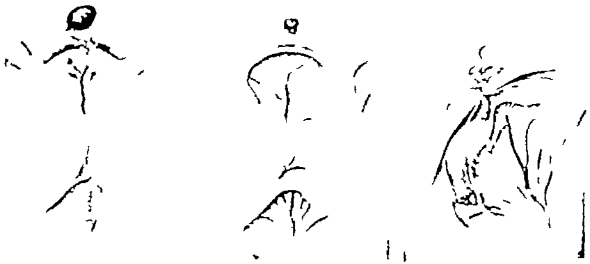
INCREASED
PERISTALIC EFFORTS AND INTRALUMINAL PRESSURE RESTORE BOWEL CONTINUITY

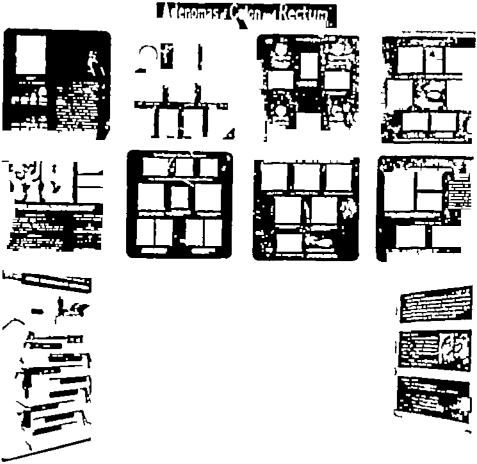
ANTIMESENTERIC
SURFACE BECOMES STRANGULATED IN HERNIAL SAC

RESECT
DEVITALIZED SEGMENT & REPAIR HERNIA

PLICATE
THE WALL WHEN AREA OF NECROSIS IS SMALL & REPAIR HERNIA

ENTEROSTOMY
SHORT CIRCUIT WITH ENTERO ENTEROSTOMY LATER RESECT & REPAIR HERNIA



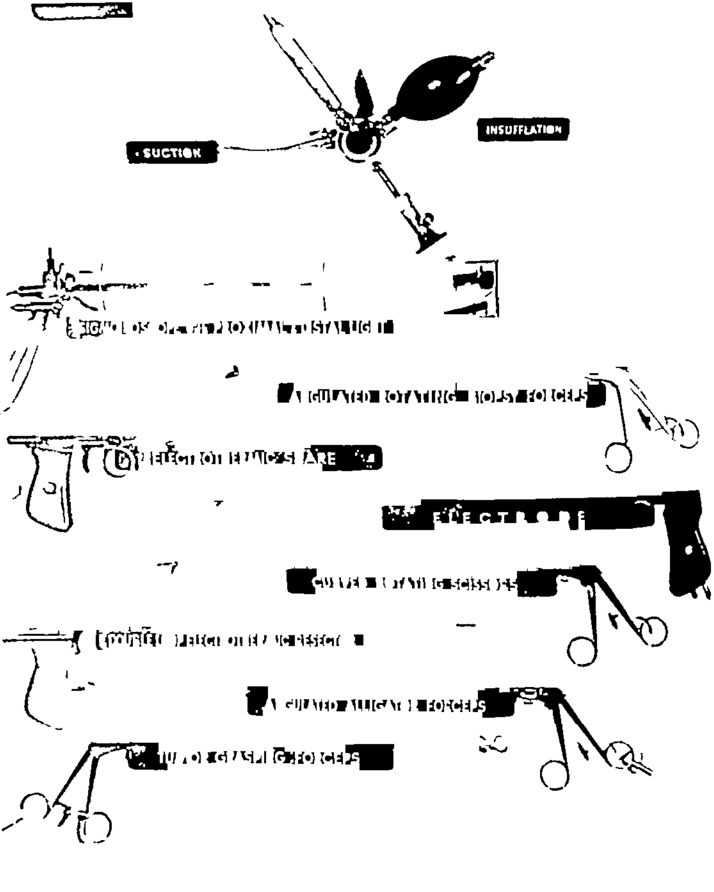


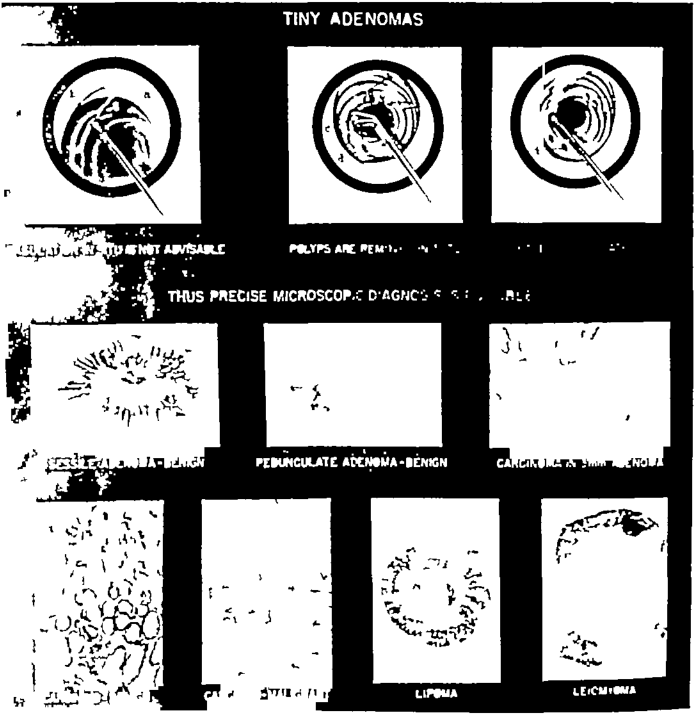
Adenomas of the Rectum and Colon.

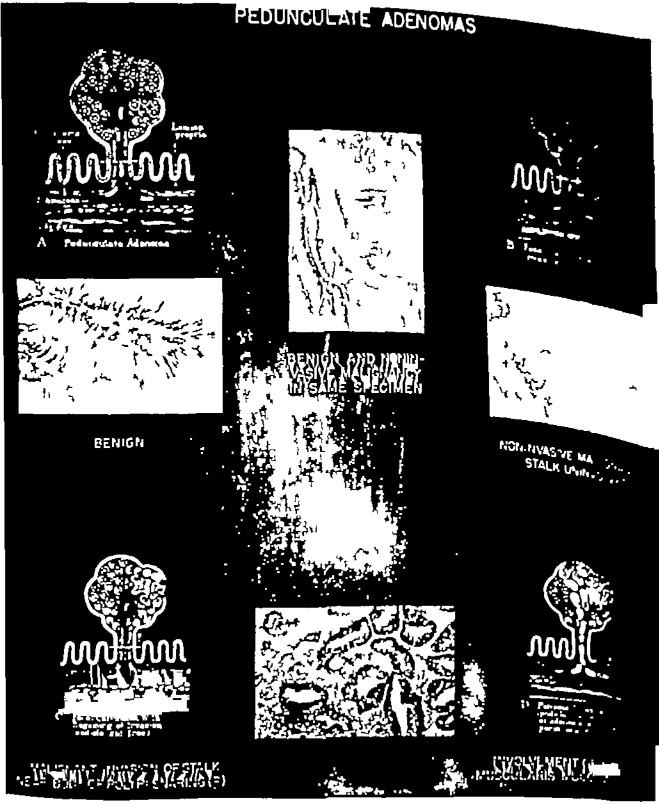
ROBERT TURELL and ROBERT PARADNY NEW YORK.

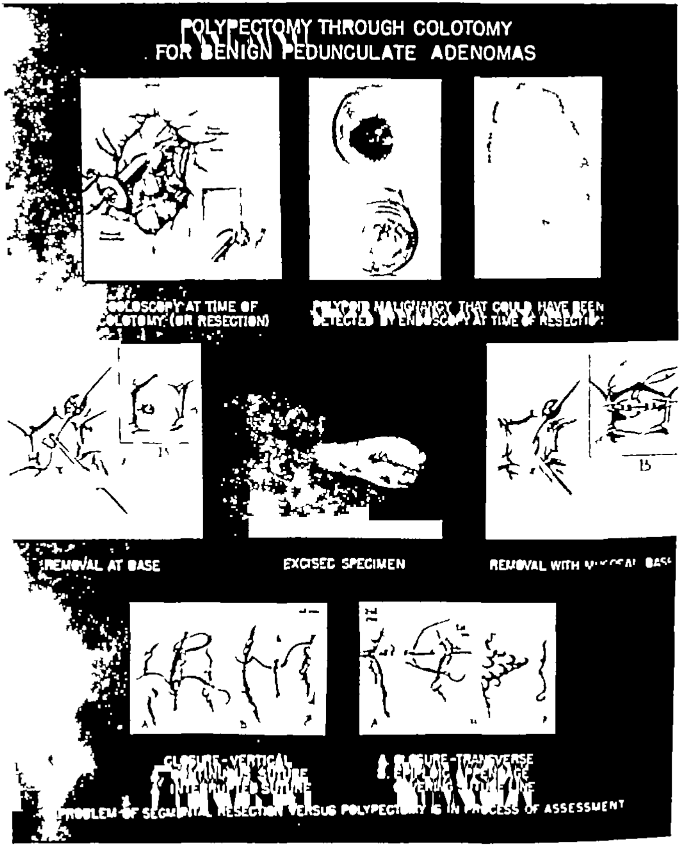
The exhibit deals with the incidence distribution, types, genesis, familial tendency cancer potential, and treatment of discrete single or multiple scattered adenomas. Practically all of these items are illustrated by means of black and white and colored gross and/or microscopic transparencies. The text is precise, clear and short. The bulk of the exhibit is devoted to treatment and illustrates the newest electrothermic methods and surgical techniques. Brief allusion is also made to the pediatric aspects of this problem, to the familial type of polyposis, and to adenomas occurring in association with inflammatory disease of the colon.

AUTHOR'S ARMAMENTARIUM FOR ELECTROTHERMIA




TINY ADENOMAS
NOT ADVISABLE
POLYPS ARE
THUS PRECISE MICROSCOPIC
PEDUNCULATE ADENOMA-BENIGN
LIPOMA


PEDUNCULATE ADENOMAS
A Pedunculate Adenoma
BENIGN
BENIGN AND NONIN-
VASIVE MALIGNANCY
IN SAME SPECIMEN


POLYPECTOMY THROUGH COLOTOMY
FOR BENIGN PEDUNCULATE ADENOMAS
COLOSCOPY AT TIME OF
COLOTOMY (OR RESECTION)
POLYPOID MALIGNANCY THAT COULD HAVE BEEN
DETECTED BY ENDOSCOPY AT TIME OF
REMOVAL AT BASE
EXCISED SPECIMEN
REMOVAL WITH
CLOSURE-VERTICAL
A. CLOSURE-TRANSVERSE
PROBLEM OF SEGMENTAL RESECTION VERSUS POLYPECTOMY IS IN PROCESS OF ASSESSMENT

CANCER POTENTIAL

PATIENT D.W. [illegible] SAME PAT[illegible]

CANCER OF COLON AND RECTUM ARISES IN BENIGN ADENOMAS IN OVER [illegible] CASES. SINCE THERE [illegible] CRITERIA THAT [illegible] GIVEN ADENOMA, ALL SHOULD BE [illegible] AS A MATTER OF CANCER [illegible]

INCIDENCE - VARIES

(1) IN CANCER DETECTION CLINIC, FROM 12.6% TO [illegible]
(2) [illegible] FROM 2-7% TO 12% [illegible]
(3) [illegible] 2.6% TO [illegible] AND
(4) [illegible] CANCER, FROM 25% [illegible] LESIONS TO 35% PLUS IN MULTIPLE [illegible]
[illegible] CANCERS [illegible]

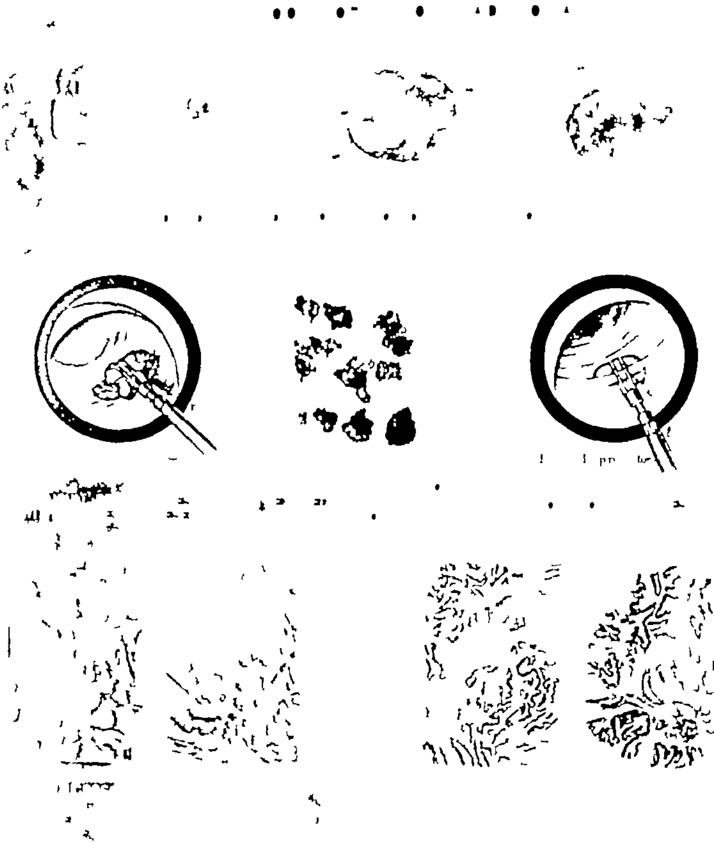
DISTRIBUTION

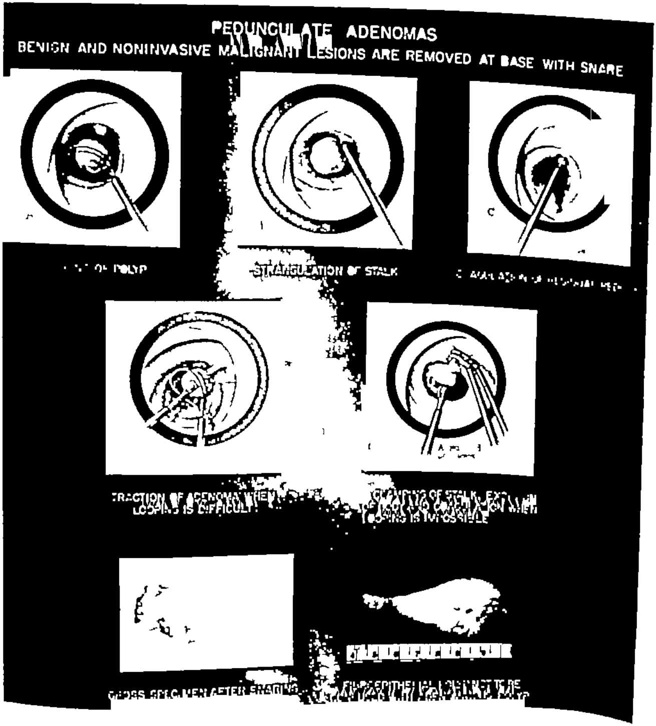
[illegible] OCCUR WITHIN REACH OF SIGMOIDOSCOPE (AULT, RIDER, [illegible] [illegible] USUALLY FAILS TO DETECT [illegible] CM. IN DIAMETER, WHEREAS [illegible] POLYPS AS SMALL AS 2 [illegible] [illegible] OF [illegible]

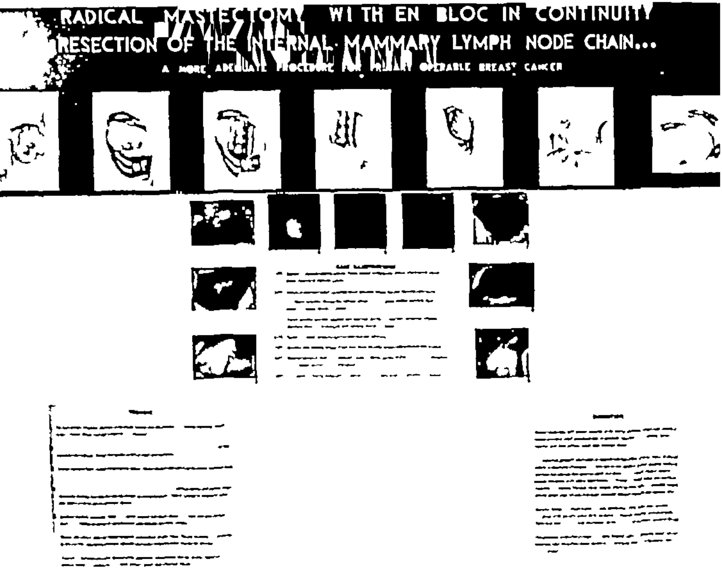
FAMILIAL TENDENC[illegible]

NOTE EXC[illegible]

[illegible]




PEDUNCULATE ADENOMAS
BENIGN AND NONINVASIVE MALIGNANT LESIONS ARE REMOVED AT BASE WITH SNARE
STRANGULATION OF STALK
LOOPING IS DIFFICULT
GROSS SPECIMEN AFTER SNARING

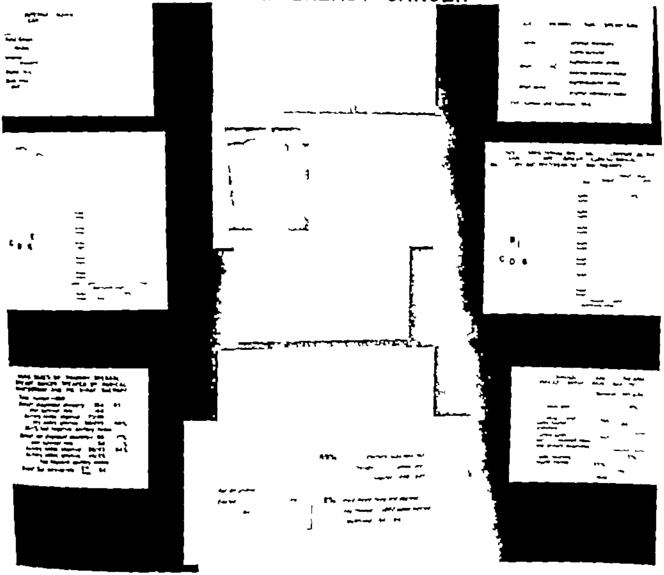


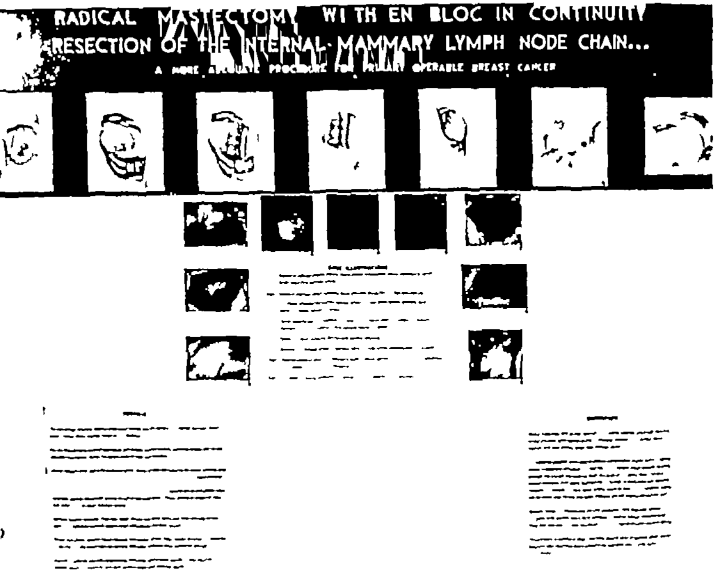
Radical Mastectomy with en Bloc Resection of the Internal Mammary Lymph Node Chain.

JEROME A. URBAN, Memorial Hospital, New York.

Breast cancer drains primarily into two main lymphatic depots, the axilla and the internal mammary chain. The classical radical mastectomy procedure removes only one of these depots, the axillary nodes. A new operative technique that removes the primary breast cancer in continuity with both of its primary lymphatic drainage depots is demonstrated. This practical procedure has been applied to a series of 200 cases of primary operable breast cancer. In this group of patients 54% had positive axillary nodes, 36% positive internal mammary nodes, 40% all nodes clear. Thirteen per cent of all patients with normal axillary nodes had abnormal internal mammary nodes. To date only three cases of local recurrence as the first sign of recurrent cancer have appeared. The three year survival rate is 77%. Postoperati e mortality is only 0.5% or one patient out of 200. There has been no real increase in postoperative morbidity and all patients have returned to their previous state of functional activity.

THE SURGICAL IMPORTANCE OF THE INTERNAL MAMMARY LYMPH NODE CHAIN IN BREAST CANCER



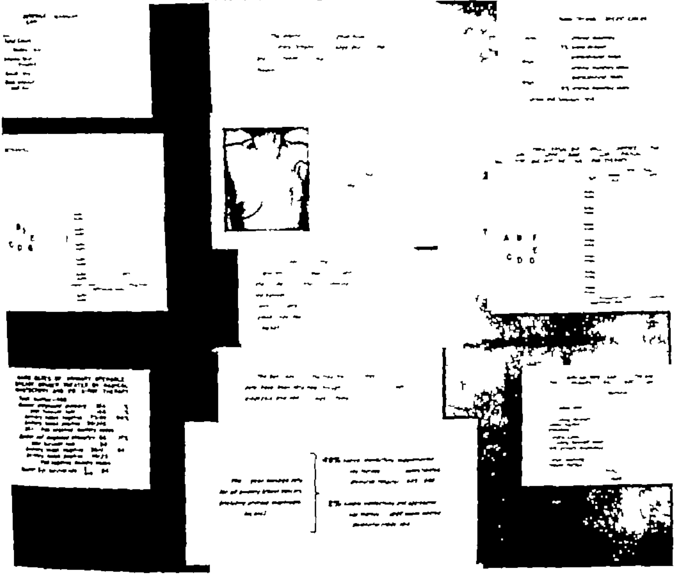


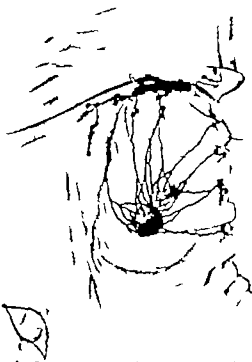
Radical Mastectomy with en Bloc Resection of the Internal Mammary Lymph Node Chain.

JEROME A. URBAN, Memorial Hospital, New York.

Breast cancer drains primarily into two main lymphatic depots, the axilla and the internal mammary chain. The classical radical mastectomy procedure removes only one of these depots, the axillary nodes. A new operative technique that removes the primary breast cancer in continuity with both of its primary lymphatic drainage depots is demonstrated. This practical procedure has been applied to a series of 200 cases of primary operable breast cancer. In this group of patients 54% had positive axillary nodes, 36% positive internal mammary nodes, 40% all nodes clear. Thirteen per cent of all patients with normal axillary nodes had abnormal internal mammary nodes. To date only three cases of local recurrence as the first sign of recurrent cancer have appeared. The three year survival rate is 77%. Postoperative mortality is only 0.5%, or one patient out of 200. There has been no real increase in postoperative morbidity, and all patients have returned to their previous state of functional activity.

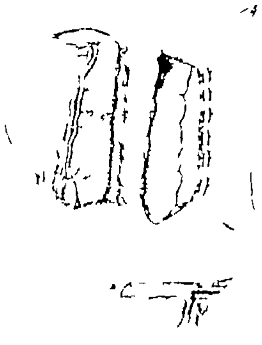
THE SURGICAL IMPORTANCE OF THE INTERNAL MAMMARY LYMPH NODE CHAIN IN BREAST CANCER





1 The main primary lymphatic drainage of the breast extends into the axillary and internal mammary lymph nodes (Insert shows average extent of skin incisions)

2 Thin skin flaps developed, pectoralis major muscle split medially between clavicular and sternal bundles, first rib and manubrial arch exposed. (Dotted line depicts extent of chest wall resection)



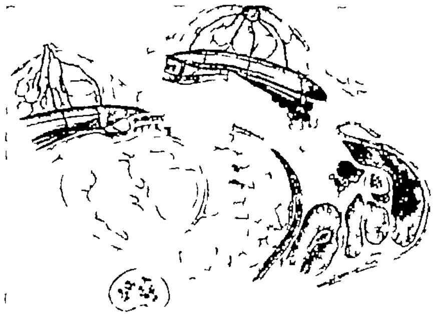
3 Internal mammary blood vessels transected and ligated. Portion of chest wall containing the internal mammary lymph nodes [illegible] covered by parietal pleura) incised and reflected laterally still in continuity with overlying muscle and breast

4 Fascia lata sutured to mediastinal pleura and attached to sternal margin with mattress sutures of 0 chromic catgut. Untrimmed end [illegible] inserted laterally through an intercostal space. Fascia sutured to margin of the [illegible]

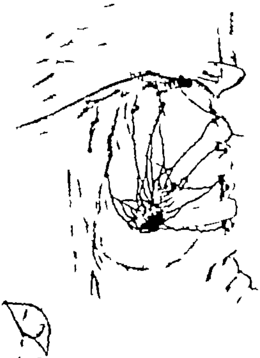
[illegible]

5 *Combined resection completed chest wall defect covered with tense fascia lata flush with outer surface of chest wall Parasternal portion of opposite breast undermined to facilitate closure*

6 *Primary skin closure obtained through adequate mobilization of skin flaps Tension on suture line prevented by thru and thru stay sutures which also eliminate dead space 2 Penrose drains inserted for drainage*



7 *Diagram of operative specimen demonstrating anatomical relationships and the en bloc resection of the primary cancer continuity with both primary lymph node drainage depots*



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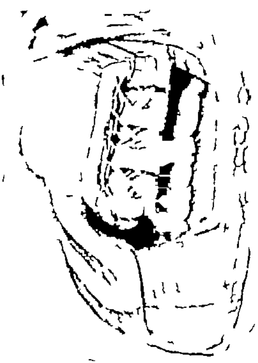
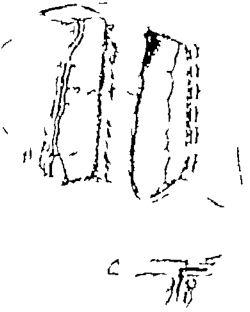
4





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Neck Dissection (Cont)

In a radical dissection of cervical structures all tissues that can be sacrificed are removed en bloc leaving only the carotid arteries and certain tissues

Postoperative Care

1 Antibiotic therapy (usually penicillin 600 000 units daily) to prevent infection
2 Anticoagulant prophylaxis beginning the fourth postoperative day in all cases
3 Early ambulation beginning day of surgery
4 Frequent use of tracheostomy to insure an adequate airway Especially indicated following hemimandibulectomy or bilateral neck dissection
5 Maintenance of nutrition by intravenous infusions and by nasal-tube feeding as soon as possible

Type of Anesthesia

General anesthesia (usually sodium pentothal) and a cuffed intratracheal tube are used

Blood transfusions are given as indicated

Temporary tracheostomy is established frequently to assure an adequate airway

Mortality

Mortality rate from neck dissection alone is less than 1 per cent and for combined procedures 3 per cent

Hospitalization for patients on whom neck dissection alone is carried out is 3 to 5 days and for those on whom a combined operation is done is 7 to 10 days

Indications For Neck Dissection

1 When li ically po itive or proved posi tive cervical met t ti lesion re present regardles f location of th primary lesion

2. When it i necessary t expos the l teral neck for hemimandibulectomy even though the cervical nodes do not ppea t be meta t tical ly involved

3 When the primary lesion i i the tongue floor f the mouth cheek and l ryngopharynx regardles f evidence f li ical met stati invol ement

Bilateral Radical Neck Dissection

A bil teral neck di section (simult neous or two- tage) i frequently indicated nd ju tifi bl when met t ti lesions re pre ent bil t erally The procedur ca be ca ied out with saf ty

Simultaneous neck di section i indicated when it i f lt that the ide not oper ted upon may become inoperabl before the second tag can be done

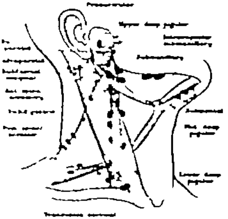
Cyanosi f the head i f equently present for 3 t 7 days postoperatively Marked edema f the f ce may ppea the cyanosi disappea Thi condition too gradually [illegible] compl t ly

Neck Dissection For

Metastatic Lesions
And Removal of the Primary Lesion

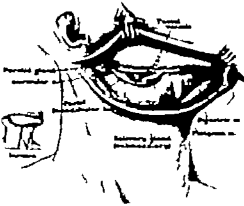
Dissection of Neck and Treatment of Primary Lesion Should be a Combined Procedure

In treating labial oral or laryngeal carcinoma dissection of the neck when indicated should be carried out simultaneously with the treatment of the primary lesion as a combined procedure The contents of the neck and the primary carcinoma may be removed separately but if anatomically possible en bloc dissection of both is preferable Excision of the primary lesion should be wide and include a proved margin of normal tissue about the lesion; if any dissection in the neck is indicated it should always be radical in type



Nodes to Be Removed

[illegible] neck dissection for labial or [illegible] carcinoma should remove [illegible] be made shown [illegible] the [illegible] nodes [illegible] the dissection, the tissues [illegible] sacrificed should be removed en bloc



Suprahyoid Incision

Suprahyoid incision [illegible] and first and neck structures to be removed are freed from the lower border of the mandible The mandibular branch of the facial nerve [illegible] preserved unless the adjacent tissues are involved.

Vertical Incision

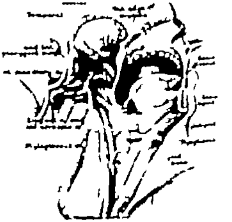
A vertical incision [illegible] extended to the [illegible] and skin flaps retracted The platysma muscle, if not involved by the tumor [illegible] usually preserved and left [illegible] the skin flaps

Sternocleidomastoid and Omohyoid Divided

[illegible]

Dissection Completed

The internal jugular vein divided and [illegible] The jugular foramen [illegible] possible The hypoglossal, lingual, vagus or phrenic nerves [illegible] be [illegible] if necessary Carotid vessel may [illegible] be sacrificed if invaded by the [illegible]



Hemiglossectomy and Hemimandibulectomy

Hemiglossectomy [illegible] and [illegible] of the floor of the mouth have been completed [illegible] should be done en bloc with the neck structures but may [illegible] be done independently [illegible] these tissues [illegible]

Neck Dissection (Cont)

In a radical dissection of cervical structures all tissues that can be sacri ficed are removed en bloc leaving only the carotid arteries and certain tissues

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Cyanosi of the head is frequently present for 3 t 7 days postoperatively edema f th f ce may appea ... Thi condition ... complet ly

Illustrative Cases

Early Treatment is Most Essential

The best time to treat intra-oral carcinoma is during the early localized stage This implies an alert lay group and a high index of suspicion among the medical and dental profession Precancerous lesions such as leukoplakia and epithelial hyper plasia should be removed before obvious carcinomatous changes occur

One should not advocate radical surgical procedures with their functional and cosmetic deformities except when absolutely necessary Unfortunately many pa tients come to surgeons with extensive or recurrent lesions that make radical combined resections necessary

Carcinoma of the Tongue

Woman 53 years old Smarting under the tongue for 4 weeks Ulcerative lesion 2 5x3 cm along left border of middle third of tongue Treated by combined radical neck dissection and hemiglossectomy by pull-through procedure preserving the mandible Pathologic report: grade 2 S C E No recurrence 25 months postoperatively

The Le ion

The Tongue 12 Day Aft Remov l f Lesion

The Tongue 3 Month After Removal f Lesion

Mi imal Deformity F llowing Neck Di ection

Carcinoma of the Floor of the Mouth and Tongue

Man 57 years old "Growth in mouth for 3 months Lesion involved floor of mouth extending to lateral margin of tongue Treated by combined radical neck dissection hemiglossectomy hemimandibulectomy Pathologic report: grade 2 S C E 2 5x2 4 cm Mandible not invaded Cervical lymph nodes negative Three months later early S C E excised locally from opposite floor of mouth No re currence 10 months postoperatively

F llowing Oper tions

Surgi l Spe imen

Mi imal Deformity F llowing Hemimandibulectomy

Patient i Good Healt 8 Month After Ope tion

Illustrative Cases

Carcinoma of the Jaw

Man 51 years old A lesion 4x2x2 cm involved the right mandible and caused numbness of lower jaw Roentgenograms showed destruction of mandible near the angle Biopsy: grade 2 S C E Treated by radical neck dissection and hemimandibulectomy Patient had good occlusion without prosthesis No recurrence 20 months postoperatively

Preoperative Appearance

Destruction of Mandible Near Angle

Minimal Deformity No Prosthesis Used

Good Occlusion in Spite Of Hemimandibulectomy

Carcinoma Base of the Tongue and Epiglottis

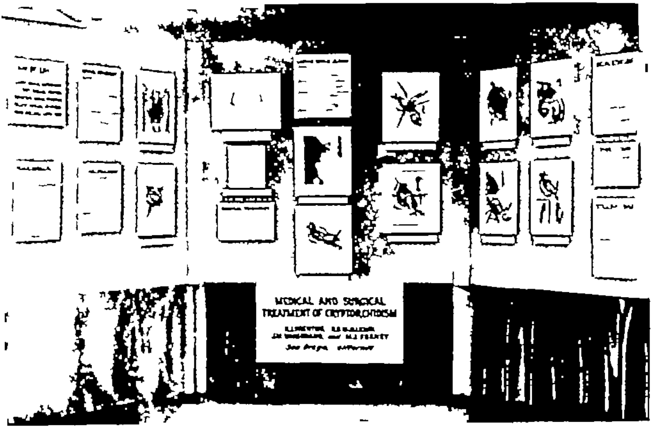
Man 67 years old Dysphagia for 1 year Bilateral lumps in the neck 3 months Extensive ulceration involving base of tongue extending into epiglottis; bilateral metastatic masses Bilateral simultaneous radical neck dissection total laryngectomy and excision of base of tongue Pathologic report: gr 2 S C E of base of tongue with bilateral metastatic masses No recurrence 3 years postoperatively

Appearance of Wound Before Closure

Postoperative Specimens

Closure of Wound Hot Type f In i ion

I Good Health Aft-- C



Medical and Surgical Treatment of Cryptorchidism.

ROBERT J PRENTISS RALPH B MULLENIX, JAMES M. WHISENAND and MICHAEL J FEENEY San Diego Calif

The exhibit deals with medical and surgical treatment of the undescended testis. The timing of medical and surgical treatment is listed. The pertinent surgical anatomy and surgical principles are reviewed. The plan for establishment of testis biopsy banks for further study and correlation to determine the optimum time of transplantation of the testis is presented. Conclusions suggest that the testis should be transplanted by the fifth year of life The authors technique has the advantage of the application of the elimination of the lateral and inferior sides of the spermatic surgical triangle. Chorionic gonadatrophins aid in increasing the size of the genitals for better technical execution of the operation but have not aided in causing consistent descent of the testis.

● AIM OF EXHIBIT

TO

1. CLARIFY MEDICAL MANAGEMENT
2. ILLUSTRATE SURGICAL ANATOMY
3. DEMONSTRATE SURGICAL PRINCIPLES
4. PRESENT SURGICAL TECHNIQUE
5. PRODUCE MORE VIABLE SCROTAL TESTES.

SURGICAL MANAGEMENT

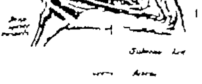
1. REASONS FOR OPERATION
   [illegible]
2. TIME OF OPERATION
   [illegible]
   b. Before puberty
   [illegible]
3. SURGICAL SIGNIFICANCE OF TESTICLE LOCATION:
   [illegible]

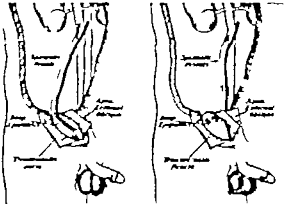
MEDICAL MANAGEMENT

1. CAREFUL REPEATED EXAMINATION
   [illegible]
2. FULL DISCUSSION WITH PARENTS OF POSSIBILITIES.
3. USE OF CHORIONIC GONADOTROPHINS.
   [illegible]
4. USE OF TESTOSTERONE
   [illegible]
5. SPECIAL PROBLEMS IN BILATERAL CRYPTORCHIDISM.
   [illegible]
6. BALLENGER SUCTION UNSATISFACTORY

PERTINENT SURGICAL ANATOMY

1. THE SPERMATIC [illegible]
2. THE RETROPERITONEAL [illegible]
3. LATERAL SPERMATIC [illegible]
4. TRANSVERSALIS FASCIA [illegible]
5. DEEP EPIGASTRIC VESSELS
   [illegible]
6. DARTOS FASCIA OF SCROTUM
   [illegible]

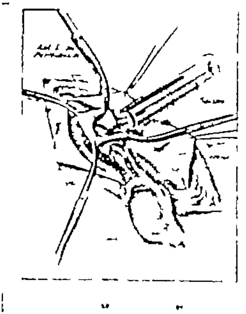


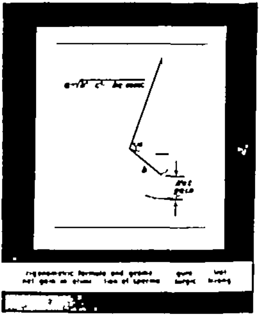


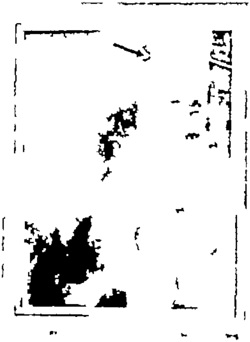
LEFT: Oblique schematic view to illustrate spermatic triangle. RIGHT: Cord elongation through medial displacement by elimination of lateral and inferior sides of spermatic surgical triangle

IMPORTANT POINTS OF TECHNIQUE

1. Adequate incision
2. Division of transversalis and deep epigastric vessels
3. Development of retroperitoneal space— to kidney if necessary
4. Division of retroperitoneal lateral spermatic ligament
5. High dissection of spermatic vessels, with medial displacement
6. Elevation of peritoneum from cord with saline
7. Place abdominal exit of spermatic cord at external ring
8. Avoid tearing of cord
9. Do not attempt major lengthening of cord between internal and external rings
10. Incision of dartos if scrotum is small.



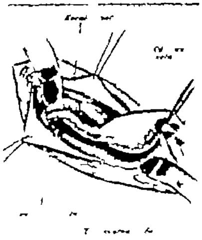


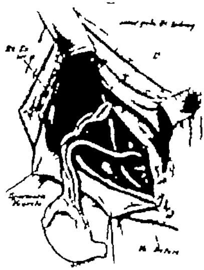


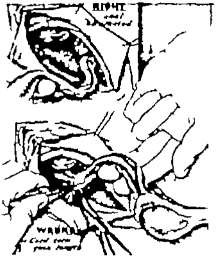
SURGICAL PRINCIPLES

1. Elimination of lateral and inferior sides of spermatic surgical triangle insures elongation of cord without injury to vessels or vas deferens.

2. Retroperitoneal dissection division of transversalis fascia of inguinal canal floor and division of deep epigastric vessels allows spermatic vessels to traverse a relatively short, straight course to scrotum.







SPECIAL SITUATIONS

1. SINGLE TESTIS, IMPOSSIBLE OF SCROTAL TRANSPLANT
   - a. Leave in canal —
   - b. Leave [illegible]
     Because [illegible]
2. TWO TESTES ONE IMPOSSIBLE OF SCROTAL TRANSPLANT
   - a. Leave in canal, and remove later if painful
     Because [illegible]
   - b. If [illegible] — orchiectomy
     [illegible]
     [illegible]

THOSE [illegible] TO THEORY OF INCREASED DANGER OF FUTURE MALIGNANCY, WILL REMOVE ABDOMINAL AND INGUINAL TESTES.

3. ROUTINE EXPLORATION REVEALS NO TESTIS
   - a. Be sure [illegible] cord and testis not present
   - b. Open [illegible] to explore pelvis
   - c. Explore [illegible]
4. ECTOPIC TESTIS — PERINEAL OR SUBCUTANEOUS.
   - a. [illegible] technical surgical problem
   - b. Scrotal transplant ation is simple

OTHER METHODS

BEVAN —

1. Fails t take advantage of shortest distance princ pl
2. R lie on leng tion by t arl g c rd from int al ng outward

TOREK —

1. Adm t a f at if [illegible] a y at an.
2. P oper elonga ion of cord [illegible] eed for this fasc a fi ation
3. Possibly [illegible] in agen ous of scrotum.

TESTICLE BIOPSY BANKS

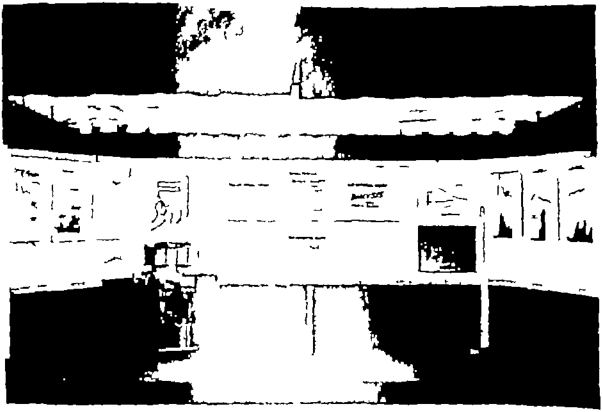
WHY
To settle problem of timing of orchiopexy

HOW
[illegible] each t sticle [illegible]
Fix in [illegible] solution
Send to nearest bank
Send history and [illegible] record

WHERE
FAR WEST —— Dept. of Urology, Univ of Calif, [illegible]
MIDDLE WEST — Dept. of Urology, Univ of Iowa, Iowa C [illegible]
EAS —— Dept. of Urology, Columbia Univ, Ne [illegible] City

FOLLOW UP
Th [illegible] enters will study and preserve data. Later follow-up biopsy [illegible] study and correlation will settle the problem

ALL SURGEONS ARE URGED TO USE THIS SERVICE.



Allen Keltzer Modification of Skeggs Leonards Artificial Kidney

Walter A. Keltzer and Manley L. Ford, Akron, Ohio.

The exhibit shows an artificial kid[illegible] [illegible] [illegible]lyzer attachment. Placards show results of the application [illegible] [illegible] art[illegible] kidney to patients.

THE ARTIFICIAL KIDNEY

by

DIALYSIS

REMOVES
NITROGENOUS WASTE

Allen-Keitzer Modification of Skeggs Leonards ARTIFICIAL KIDNEY

Assembly in 15 30 minutes by nursing personnel

Generates own steam for sterilization.

Elimination of pressure valves by Rotary Pumps

Only tubing & material of hospital used

One pint of blood sufficient to fill kidney

Dialyzing surface of 30000 Sq. Cm.

Reduces blood urea nitrogen 40 50 mgm % per hour

Compact unit easily transported or stored.

Set up dry for later application.

THE ARTIFICIAL KIDNEY

by

DIALYSIS

RESTORES

CHEMICAL BALANCE

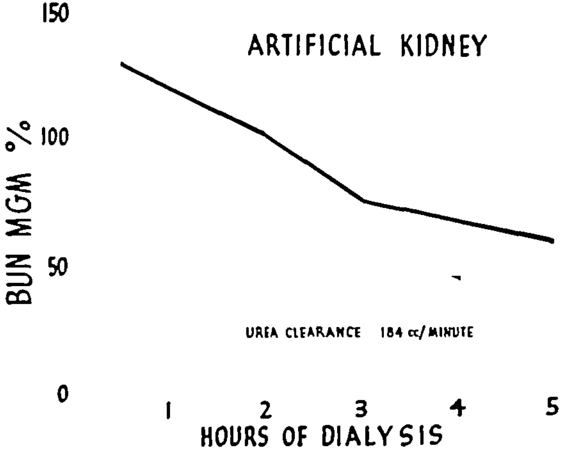
THE ARTIFICIAL KIDNEY

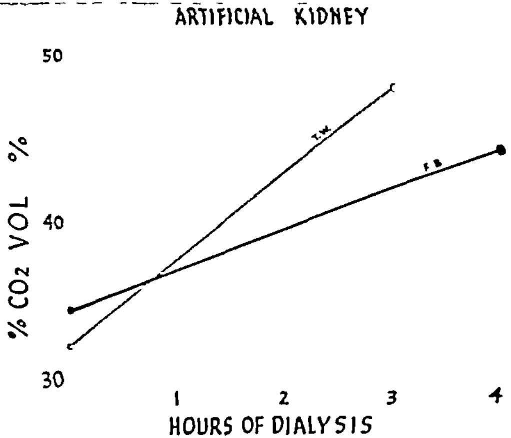
by

ULTRAFILTRATION

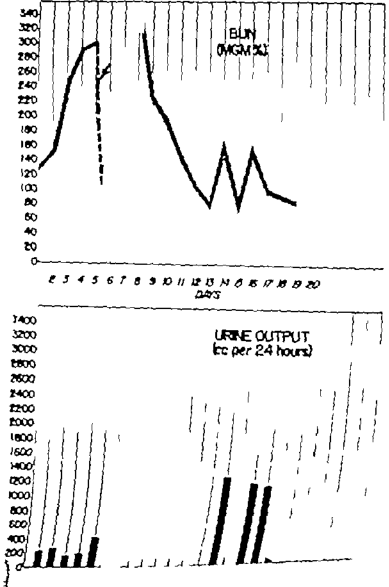
RESTORES

FLUID BALANCE

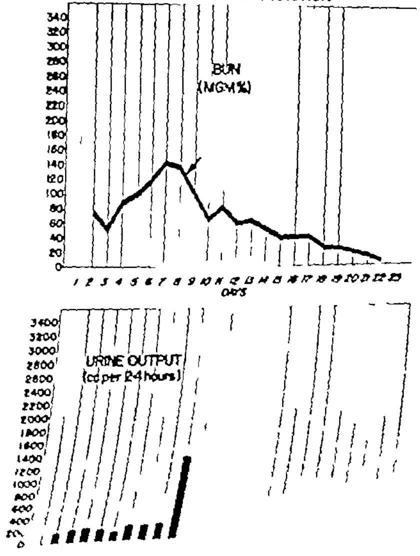

ARTIFICIAL KIDNEY
BUN MGM %
150
100
50
0
UREA CLEARANCE 184 cc/MINUTE
1 2 3 4 5
HOURS OF DIALYSIS


ARTIFICIAL KIDNEY
% CO2 VOL %
50
40
30
1 2 3 4
HOURS OF DIALYSIS

UREMIA with OLIGURIA secondary to DEHYDRATION, PERITONITIS



POSTPARTUM
TRANSFUSION REACTION



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